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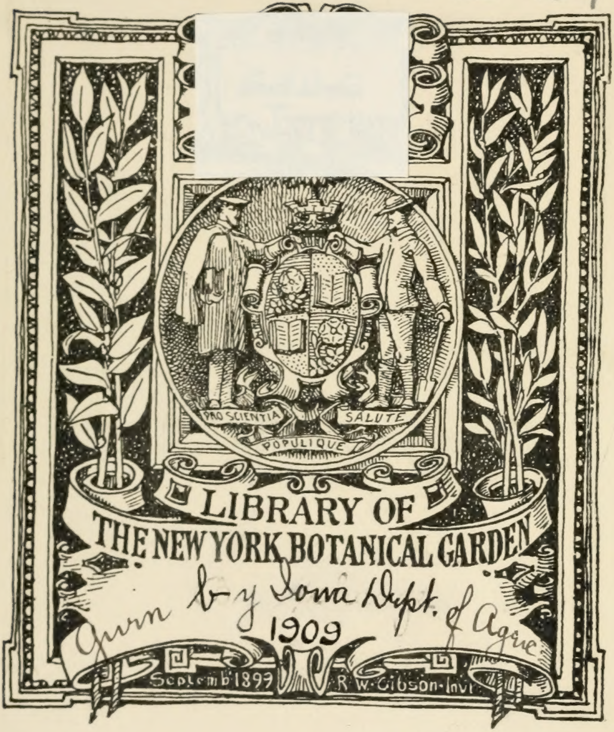

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NINTH ANNUAL

Iowa Year Book of Agriculture

Issued by the

Iowa Department of Agriculture

1908

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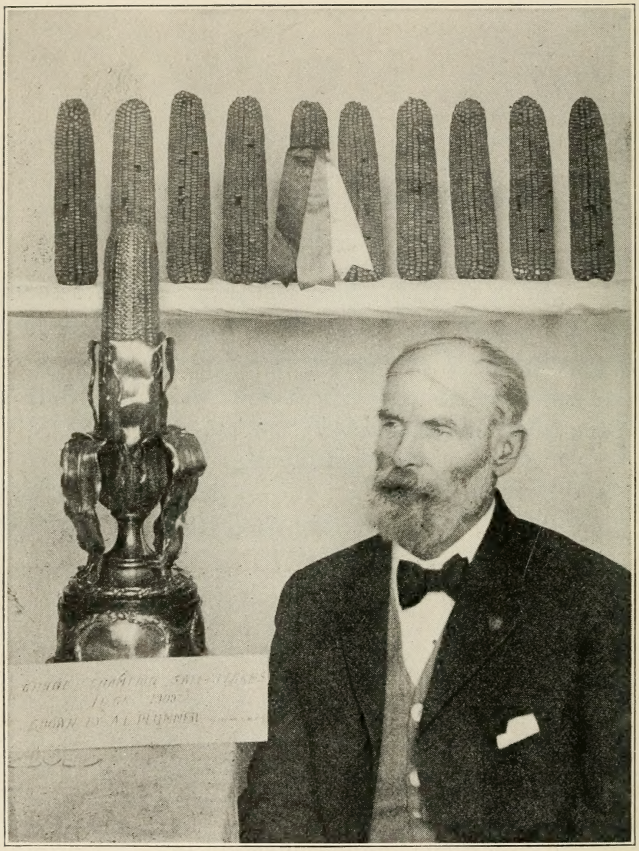
LETTER OF TRANSMITTAL

Office of Iowa State Department of Agriculture,
Des Moines, Iowa, February 10, 1909.

To His Excellency, B. F. Carroll, Governor of Iowa:

Sir:—I have the honor to transmit herewith the Ninth Annual Iowa Year Book of Agriculture, for the year 1908.

Respectfully submitted,
JOHN C. SIMPSON,
Secretary State Board of Agriculture.



A. L. PLUMMER, Altoona, Iowa,

Exhibitor of the Grand Sweepstakes Ten Ears of Corn and winner of the "Whiting Trophy" at the Iowa Corn Growers Association, Ames, Iowa, January, 1909.

INTRODUCTORY

A perusal of the contents of the Ninth Annual Iowa Year Book of Agriculture for the year 1908 will be interesting, and we trust instructive. It contains sixteen subdivisions. Preceding Part I is a condensed statistical table showing briefly why Iowa stands out pre-eminently as the greatest agricultural state in the Union. These tables were prepared in the office of the Iowa Department of Agriculture and will be continued yearly.

The Thirty-third General Assembly did not see fit to provide additional funds for broadening the scope of the work in this Department. This action is much to be regretted and we think future general assemblies will deal more liberally with the Department.

An amendment to the manner of filing reports by the farmers' institutes was passed whereby all future reports are made direct to the secretary of the Iowa State Board of Agriculture instead of to the county auditor. This will keep the Department in closer touch with the institutes and provides a way of gathering more accurate information relative to the institutes.

As recommended in our last report, the Thirty-third General Assembly repealed and re-enacted that section of the code with reference to the collection of agricultural statistics. As it now stands, greater latitude is given the Department as to what data may be required. It not only requires assessors to list the acreage and yield of farm crops, but also to obtain such data on live stock, poultry, eggs, etc., as may be asked for by the Department; prior to the enactment of this law the Department had no authority to require such data. The law now conforms to similar laws of the various states and will be valuable in disseminating Iowa's agricultural and live stock resources.

Again I desire to call to the attention of the legislative bodies of Iowa the urgent need of granting authority to the Department to issue bulletins from time to time containing such information or data as would be of interest and value to the public. Thousands of letters are annually received by the Department asking for literature on various subjects pertaining to Iowa agriculture which cannot be supplied unless authority is given by the general assembly to issue such literature. The agricultural interests of the state should unite in demanding that the next session of the legislature provide an ample support fund and authority to the Department that the work could be carried on in a commendable manner. Iowa, the greatest of all agricultural states, has done less toward the maintenance of a Department of Agriculture than any state in the union.

Part I of this volume contains the final summary of the Iowa Weather and Crop Service for the year 1908. In this part will be found a monthly review of the climatology for the year, the annual precipitation chart, dates of the last killing frost in the spring and first killing frost in the fall, the final acreage of the yield and acreage of soil products together with their estimated value (farm prices) December 1, 1908. Part II contains tables of Iowa's principal farm crops for a period of years, farm crops of the United States for 1908, farm crops of the world for 1907, and number and value of farm animals for the United States, January 1, 1909. Parts III and IV contain the proceedings of the state farmers' institute and agricultural convention held in December, 1908. Part V gives a synopsis of the state board and committee meetings for the year 1908; Part VI the proceedings of the 1908 Iowa Swine Breeders' Association meeting; Part VII the proceedings and addresses given before the Iowa State Dairy Association with a copy of the law passed by the last general assembly for the promotion of the dairy interests of the state; Part VIII statistical information on the dairy industry of Iowa; Part IX a partial report of the work of the state veterinary's department; Part X symptoms and treatment of some common diseases among domestic animals; Part XI a report of the Iowa State Fair and Exposition of 1908; Part XII papers and addresses relating to agriculture in its various branches; Part XIII reports from county and district agricultural societies; Part XIV a report of the division of horse breeding from May 1, 1908, to May 1, 1909; Part XV laws relating to the work of the department of agriculture, new fence law, and the lien law for stallion service; and Part XVI a directory of associations and organizations representing agricultural interests, both state and national.

Care has been taken in preparing the copy for the Year Book and an earnest effort made to have it issued promptly. The failure of the last general assembly to provide adequate clerical assistance for the department has caused much delay in preparing and proofreading copy. The number of copies issued is three thousand.

They are for free distribution to all who may desire them so long as the limited supply lasts.

J. C. SIMPSON,
Secretary Iowa State Board of Agriculture.

Des Moines, Iowa, February 10, 1909.

STATE BOARD OF AGRICULTURE
1909

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Governor of State	Des Moines
President Iowa State College	Ames
State Dairy Commissioner	Des Moines
State Veterinarian	Forest City

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W. C. Brown, *Vice-President*	Clarion
J. C. Simpson, *Secretary*	Des Moines
G. S. Gilbertson, *Treasurer*	Des Moines

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Second District—C. W. Phillips	Maquoketa
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Ninth District—M. McDonald	Bayard
Tenth District—O. A. Olson	Forest City
Eleventh District—H. L. Pike	Whiting

President, Vice-President, Secretary and Treasurer are elected for one Year.

Terms of Directors for even-numbered Districts expire Second Wednesday in December, 1910. Terms of Directors for odd-numbered Districts expire Second Wednesday in December, 1909.

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YEAR 1909.

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J. C. SIMPSON

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C. E. CAMERON....................................S. B. PACKARD
W. C. BROWN J. C. SIMPSON C. W. PHILLIPS

IOWA WEATHER AND CROP SERVICE:

GEO. M. CHAPPEL, Director............................DES MOINES

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Papers and addresses relating to live stock, agriculture and miscellaneous subjects.

PART XIII.

Condensed reports on Condition of Agriculture from County and District Agricultural Societies.

PART XIV.

Report of Division of Horse Breeding.

PART XV.

Laws relating to work of Department of Agriculture; law defining what constitutes a lawful fence; law giving owner or keeper of a stallion a lien upon his get for the service fee.

PART XVI.

Directory of Associations and organizations representing agricultural interests, both state and national.

IOWA'S SOURCE OF WEALTH.

COMPILED ESPECIALLY FOR THE IOWA YEAR BOOK.

ACREAGE, PRODUCTION, AVERAGE YIELD AND VALUE PER ACRE AND TOTAL VALUE OF IOWA FARM PRODUCTS FOR THE YEAR 1908.

Farm Products	Acreage	Production	Average yield per acre	Average farm price Dec. 1, 1908.	Value per acre	Total Value
Corn	8,399,610	301,873,150	35.9	$ .51	$18.31	$153,955,306
Oats	4,431,650	112,830,490	25.5	.43	10.97	48,517,110
Barley	397,408	10,629,660	26.7	.50	13.35	5,314,830
Winter Wheat	85,147	1,678,540	19.7	.86	16.94	1,443,514
Spring Wheat	323,467	4,968,250	15.4	.86	13.21	4,272,695
Rye	50,893	869,072	17.1	.63	10.77	547,515
Flax Seed	40,833	461,580	11.3	1.01	11.41	466,195
Buckwheat	9,000	140,000	15.5	.78	12.09	110,000
Potatoes	118,517	10,658,290	89.9	.59	53.04	6,288,391
Hay (Tame)	3,252,370	5,838,640	1.8	6.16	11.09	35,966,022
Hay (Wild)	869,062	1,445,980	1.6	5.09	8.14	7,360,038
Pastures and Grazing	8,966,180				11.15	100,000,000
Sweet Potatoes	6,750				20.00	135,000
Sorghum and Broom Corn	8,700				20.00	175,000
Timothy and Clover Seed	113,000				15.00	1,700,000
Alfalfa and Millet	35,000				15.00	525,000
Sweet Corn	40,000				20.00	800,000
Fruit Crops and Garden Truck	500,000				17.00	8,500,000
Dairy Products						44,500,000
Poultry						22,500,000
Wool						900,000
Other acreage not enumerated	3,121,179					
Totals	32,288,100					$443,976,646

NUMBER, AVERAGE VALUE AND TOTAL VALUE OF IOWA LIVE STOCK STOCK JANUARY 1, 1909.

	Per bent.*	Number all Ages.	Average value	Total value
Horses	100	1,419,000	$103.00	$146,157,000
Mules	104	46,000	112.00	5,152,000
Milch Cows	102	1,586,000	34.00	53,924,000
Other Cattle	99	3,842,000	22.50	86,445,000
Sheep	104	747,000	4.60	3,436,000
Swine	94	7,908,000	8.00	63,264,000
Total		15,548,000		$358,378,000

*Compared with number January 1, 1908.

SUMMARY OF TOTAL ACREAGE FARM LANDS WITHIN THE STATE, NUMBER OF FARMS, AVERAGE SIZE OF FARMS, AVERAGE VALUE PER ACRE, TOTAL VALUE FARM MACHINERY, AVERAGE VALUE FARM MACHINERY PER FARM, TOTAL VALUE FARM BUILDINGS, AVERAGE VALUE FARM BUILDINGS PER FARM, TOTAL VALUE FARM LANDS AND BUILDINGS, TOTAL RURAL POPULATION (1905 CENSUS), AVERAGE RURAL POPULATION PER FARM.

Total number of acres	32,228,109
Number of farms (census 1905)	209,163
Average size of farms (census 1905)	158½
Average value per acre	$60.00
Total value of farm land	$1,933,686,540
Total value of farm machinery	$62,748,900
Average value of farm machinery per farm	$300
Total value of farm buildings	$313,744,500
Average value per farm	$1,500
Total value farm lands, buildings and machinery	$2,310,179,940
Investment in average farm, buildings and machinery	$11,045
Rural population (Iowa census 1905)	1,142,114
Average number per farm	5½

GRAND TOTALS.

Value of crops and other farm products, 1908	$443,976,646
Value of live stock January 1, 1909	358,378,000
Total for 1908	$802,354,646
Total for 1907	730,326,971
Increase for 1908 over 1907	$ 72,027,675
Total value farm lands, farm buildings, farm machinery, crops and live stock at the close of 1908	$3,112,534,586
Or an average value per farm of	$14,881
Average net returns per acre of crops and other farm products not including live stock for 1908	$15.23
Value of live stock per farm	$1,714

PART I.

Report of the Iowa Weather and Crop Service for 1908.

Geo. M. Chappel, Director.

This report is a condensation of the monthly and weekly bulletins and reports of the Iowa Weather and Crop Service. It contains, in a condensed form, all of the salient climatic features of the year, together with tabulated statistics of the staple soil products of the state.

Through the generous co-operation of the Hon. Chief U. S. Weather Bureau, the equipment of the co-operative meteorological stations has been materially improved and most of the instruments now used by the co-operative observers in the state are the same as the high standard instruments used by the U. S. Weather Bureau. Special attention has been paid to the exposure of instruments and, whenever an exposure was found to be faulty, standard instrument shelters were furnished.

Meteorological reports were received regularly each month from 122 stations in charge of co-operative observers, and also from the U. S. Weather Bureau stations at Des Moines, Davenport, Dubuque, Charles City, Keokuk, Sioux City and Omaha. Neb.

During the six crop months of 1908, this office distributed about 48,000 copies of the weekly weather crop bulletin and during the year 25,500 copies of the Monthly Climatological Report of the Weather and Crop Service.

The distribution of daily weather forecasts has been maintained, and at least one hundred thousand patrons of the rural telephone lines receive the forecasts before noon of each working day and the special warnings of the approach of cold waves, heavy snows, etc., whenever issued. The forecasts are also distributed by rural free delivery mail service to about seven thousand patrons of the rural mail routes.

There has been a marked increase in the number of requests from teachers and students of high schools and colleges for the climatological and crop statistical reports, and from drainage engineers for tabulated precipitation data; and, in order to meet the demand for information, all precipitation data available in the state are now being collected and tabulated for the several drainage basins of the state.

CLIMATOLOGY OF THE YEAR 1908.

The mean temperature and average precipitation were above the normal for the year, there being an excess in temperature of 2°, and in precipitation of 2.16 inches. The temperature was above normal every month of the year except May, June, July, August, and October; the greatest deficiency being in August, when it was 1.8° below the normal. The precipitation was above the normal in February, May, June, August, October, and November, the greatest excess being in May, when it was 3.84 inches above the normal. The winter months were comparatively warm and dry, and the summer months wet and cool. The excessive and almost continuous rains in May and June were very injurious, coming as they did during the planting season; but the injury was more than compensated for by the dry and warm weather during the latter part of August and most of September. The year as a whole has been the most profitable one on record for the farmer.

BAROMETER.—The mean pressure of the atmosphere for the year 1908 was 30.03 inches. The highest observed pressure was 30.75 inches on December 2d, at Keokuk, Lee county. The lowest pressure was 29.05 inches on April 24th, at Charles City, Des Moines, and Sioux City, in Floyd, Polk and Woodbury counties. The range for the state was 1.70 inches.

TEMPERATURE.—The mean temperature for the state was 49.5; which is 2.0° above the normal for the state. The highest temperature reported was 101° on August 3d, at Oskaloosa and Ottumwa, in Mahaska and Wapello counties. The lowest temperature reported was 18° below zero on January 29th, at Estherville and Forest City, in Emmet and Winnebago counties respectively. The range for the state was 119?.

PRECIPITATION.—The average amount of rain and melted snow for the year, as shown by complete records of 102 stations, was 35.26 inches, which is 2.61 inches above the normal, and 3. 20 inches above the average amount in 1907. The greatest amount recorded at any station for the year was 49.98 inches at Rockwell City, Calhoun county. The least amount recorded was 24.11 inches at Dubuque, Dubuque county. The greatest monthly rainfall was 14.33 inches at Fort Madison, Lee county, in May. The least monthly precipitation was trace at Tipton, Cedar county, in December. The greatest amount in any 24 consecutive hours was 6.02 inches at Stuart, in Guthrie county, on August 15th. The average amount of snowfall was 20.7 inches. The greatest amount of snowfall, unmelted, at any station during the year was 37.0 inches, at Sheldon, O'Brien county. The greatest monthly snowfall was 17.3 inches in February, at Pacific Junction, Mills county, and the greatest 24 hour snowfall recorded was 15.8 inches on February 18th, at Pacific Junction, Mills county. Measureable precipitation occurred on an average of 86 days.

WIND.—The prevailing direction of the wind was northwest. The highest velocity reported was 60 miles per hour at Sioux City, Woodbury county, from the northeast and southwest, on May 16th and June 22d. The average daily movement of wind was 208 miles.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 176; partly cloudy 96; cloudy 94; as against 168 clear days; 94 partly cloudy, and 103 cloudy days in 1907. The duration of sunshine was slightly above the normal.

MONTHLY SUMMARIES.

JANUARY.

The average temperature for the State for the month of January was considerably above the normal and about six degrees above the average for the same month last year. The records show that there have been but two warmer Januaries during the past eighteen years, viz.: 1891, with an average of 26.0°, and 1900, with an average of 25.6°. The temperature was decidedly above the normal during the first and second decades of the month and was not down to zero, except in the northern districts, until the 23d. After that date the temperature was more seasonable and records of zero or below were reported on one or more dates from all sections of the State. The amounts of precipitation were uniformly small and below normal in all portions of the State. There were but two general storms during the month. The first was on the 22d and resulted in a light snowfall; the second was on the 31st, and was attended by rain, snow and sleet, the latter causing a great deal of damage to fruit trees, telegraph, telephone and electric car lines. The amount of snowfall was also below the normal. The average of the total amounts was less than 5 inches. As a compensation for the lack of precipitation, the sunshine was decidedly above the normal. The records show that there was an average of seventeen clear days, eight partly cloudy and only six cloudy days during the month. On the whole, it was one of the most agreeable Januaries of which we have record.

Temperature.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 24.9°, which is 5.7° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 21.5°, which is 5.3° above normal; Central section, 25.3°, which is 6.2° above normal; Southern section, 27.8°, which is 5.5° above normal. The highest monthly mean was 30.4° at Keokuk, and the lowest monthly mean, 18.5° at Osage. The highest temperature reported was 60° at Logan on the 6th; the lowest temperature reported was -18° at Estherville and Forest City on the 29th. The average monthly maximum was 51.5°, and the average monthly minimum was -9.9°. The greatest daily range was 46° at Iowa City. The average of the greatest daily ranges was 36.0°.

Precipitation.—The average precipitation for the State, as shown by the records of 125 stations, was .44 inch, which is .56 inch below the normal. By sections the averages were as follows: Northern section, .35 inch, which is .45 inch below the normal; Central section, .48 inch, which is .47 inch below the normal. Southern section, .48 inch, which is .76 inch below the normal. The largest amount reported was 1.50 inches at Fort Madison. The least amount reported was .06 inch at Leon. The greatest daily precipitation reported was .80 inch at Waukee, on the

31st. The average number of days on which .01 inch or more was reported, was 2.

WIND AND WEATHER.—The prevailing direction of wind was northwest. The highest velocity of wind reported was 50 miles per hour from the northwest at Sioux City on the 15th. The average number of clear days was 17; partly cloudy, 8; cloudy, 6.

FEBRUARY.

The weather during February was mild and pleasant, with no continued cold periods. The mean temperature was above the normal, and has been exceeded only five times in the past nineteen years. The precipitation was above the normal, and heavier than usual, the average, 1.69 inches, being .98 inch, greater than February, 1907, and .12 inch greater than the largest previous amount ever recorded for the State, which was 1.57 inches, in February, 1905. The amount of sunshine was about normal.

The mean temperature exceeded the normal in all sections, the excess being greatest in the northern section, where it averaged 5.9°. The first decade was the coldest portion of the month, the coldest days of his period being the 1st and 2d, which were without exception the coldest days of the month. The warmest periods of the month were from the 9th to the 15th, and the 21st to he 25th. The monhly maximum temperatures ranged from 40° to 59°, and were reported mostly on the 12th and 24th. The monthly minimum temperatures ranged from zero to --16°, and were reported, with one or two exceptions, on the 1st and 2d.

The precipitation was well distributed throughout the State, although it was heavier in the southern and eastern counties. Precipitation occurred generally on the 4th-5th, 12th-18th, 24th-26th, and 29th, the largest amounts occurred on the 4th-5th, and 18th. The snowfall was unusually heavy, and the excess in precipitation for the month is mostly due to the severe snowstorm which swept the State on the 18th. It was the most severe of the winter, being accompanied by high wind, which drifted the snow badly, and delayed traffic in all sections of the State, the amounts of snow, ranging from 2 to 4 inches in the northern counties, to 10 to 16 inches in the southern and eastern counties. The snow disappeared very rapidly on the 22d and 23d, and at the close of the month, the ground was uncovered except for a trace in the northeastern counties.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 115 stations, was 24.3°, which is 5.1° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 22.1°, which is 5.9° above the normal; Central section 24.4°, which is 4.8° above the normal; Southern section, 26.4°, which is 4.6° above the normal. The highest monthly mean was 29.1°, at Keokuk, Lee county, and the lowest monthly mean, 18.2°, at Rock Rapids, Lyon county. The highest temperature reported was 59°, at Keokuk, Lee county, on the 12th; the lowest temperature reported was --16°, at Decorah, and Thurman, in Winneshiek and Fremont counties, on the 2d. The average monthly maximum was 49.8°, and the average monthly minimum was --7.2°. The greatest daily range was 51°, at Thurman. The average of the greatest daily ranges was 37.0°.

Precipitation.—The average precipitation for the State, as shown by the records of 121 stations, was 1.69 inches, which is .63 inch above the normal. By sections the averages were as follows: Northern section, 1.42 inches, which is .48 inch above the normal; Central section, 1.83 inches, which is .75 inch above the normal; Southern section, 1.81 inches, which is .66 inch above the normal. The greatest amount, 3.95 inches occurred at Olin, Jones county, and the least, .23 inch, at Clear Lake, Cerro Gordo county. The greatest amount in 24 hours, 2.00 inches, occurred at Olin, Jones county, on the 4th-5th. The average snowfall, unmelted, was 8.9 inches, the average for the three sections being as follows: Northern section, 8.7 inches; Central section, 9.6 inches; Southern section, 8.4 inches. The greatest monthly snowfall, 17.3 inches, occurred at Pacific Junction, Mills county, and the greatest 24-hour amount, 15.8 inches, at Pacific Junction, on the 18th.

Measureable precipitation occured on an average of 6 days.

Wind and Weather.—The average number of clear days was 12; partly cloudy, 6; cloudy, 11. The duration of sunshine was about normal, the percentage of the possible amount being 51, at Des Moines; 63, at Davenport; 52, at Dubuque; 58, at Keokuk; and 68, at Sioux City.

Northwest winds prevailed. High winds were reported on the 1st, 2d, 4th, 5th, 18th and 19th. The highest velocity reported was 50 miles per hour, from the northwest, at Sioux City, Woodbury county, on the 5th.

THE WINTER OF 1907-08.

The mean temperature of the three winter months was 26.0°, which is 5.3° above the normal for the State. The highest temperature reported was 62°, at Mount Pleasant, Henry county, on December 9th. The lowest temperature reported was -18°, at Estherville, Emmet county, and Forest City, Winnebago county, on January 29th. The average precipitation for the State was 1.04 inches—a total of 3.13 inches for the three winter months. This is .06 inch below the normal. The snowfall, unmelted, averaged 6.1 inches, and was heaviest during the month of February. The average number of days on which .01 inch or more of precipitation was reported, was 13.

The coldest period of the winter occurred during the last week of January. The winter was 2.9° warmer than the winter of 1906-07, and was 1° warmer than the winter of 1905-06. The average number of clear days was 39; partly cloudy, 21; cloudy, 31. The prevailing direction of wind was northwest. On the whole it was a very mild and agreeable winter.

MARCH.

The weather during the month was exceptionally mild and pleasant for the season, there being but five years since 1890 when a higher mean temperature for March was recorded, viz.: 1894, 1902, 1903, 1905 and 1907. The mean temperature was uniformly above the normal, no station having reported a deficiency; and while the average maximum temperature was 7.9° lower than in March, 1907, the monthly mean was only 2.7°

lower than that of last year. The lowest temperature occurred during the first decade, generally on the 8th when it was from 1° to 8° below zero in a few of the northwestern counties. The warmest days of the month were from the 10th to 14th and on the 25th and 26th. The precipitation was quite well distributed, and fell mostly in the form of rain, no snow being reported except small amounts in the central and northern counties. There was a deficiency of precipitation in the larger part of the State, the only exceptions being over the east central counties where there was a slight excess. There were three periods during the month in which the rainfall was general, viz.: 4th to 6th, 14th to 18th, and 27th to 30th, but the average number of days on which .01 inch or more fell was only six, so that the month afforded more than the usual number of pleasant days for farm and other out-door work. The growth of vegetation was not as far advanced at the end of the month as it was at the close of March, 1907, but fully as much seeding of small grain and plowing for corn has been done. The crop conditions in general are very promising.

Temperature.—The monthly mean temperature for the State, as shown by the records of 116 stations, was 37.9°, which is 3.9° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 34.7°, which is 3.5° above the normal; Central section 38.1°, which is 3.9 °above the normal; Southern section, 40.8°, which is 4.1° above the normal. The highest monthly mean was 44.8° at Keokuk, Lee county, and the lowest monthly mean 31.4° at Sibley, Osceola county. The highest temperature reported was 85° at Woodburn, Clarke county, on the 25th; the lowest temperature reported was -8° at Inwood, Lyon county, on the 8th. The average monthly maximum was 76.1°, and the average monthly minimum was 9.8°. The greatest daily range was 62° at Woodburn. The average of the greatest daily ranges was 47.9°.

Precipitation.—The average percipitation for the State, as shown by the records of 121 stations, was 1.58 inches, which is .34 inch below the normal. By sections the averages were as follows: Northern section, 1.56 inches, which is .17 inch below the normal; Central section, 1.69 inches, which is .29 inch below the normal; Southern section, 1.50 inches, which is .55 inch below the normal. The greatest amount, 3.74 inches, occured at LeClaire, Scott county, and the least, .45 inch, at Ames, Story county. The greatest amount in 24 hours, 2.15 inches, occurred at Tipton, Cedar county, on the 27th. Measureable precipitation occurred on an average of 6 days.

Sunshine and Cloudiness.—The average number of clear days was 13; partly cloudy, 7; cloudy, 11. The duration of sunshine was about normal, the percentage of the possible amount being 51 at Des Moines, 54 at Davenport, 55 at Dubuque, 55 at Keokuk, and 59 at Sioux City.

Wind.—Northwest winds prevailed. High winds were reported on the 6th, 21st and 25th. The highest velocity reported was 48 miles per hour, from the north, at Sioux City, Woodbury county, on the 25th.

TORNADO IN LEE COUNTY.

At about 6:30 P. M., March 27th, a tornado of moderate violence struck the village of New Boston, in the southeastern part of Charleston township, Lee county, resulting in considerable loss of property and injuring five people. The storm moved from northwest to southeast and was attended by a typical funnel-shaped cloud which was observed for thirty minutes before the storm struck the town. The Methodist church and the colored Baptist church were wrecked and the homes of Ayres Hancock and Grant Schroeder were blown over and demolished as were also several barns and out-buildings. The storm track is said to have been from 200 feet to half a mile wide and was followed by rain and some hail, but the precipitation was not heavy. No damage is reported to have been done, after the storm passed New Boston, but severe wind squalls were general over the southeastern part of Lee county, between 6:30 and 7:10 P. M. The official in charge of the U. S. Weather Bureau at Keokuk reports as follows: "At this station there was only a heavy shower of rain with some hail and a short wind squall from the west at 7:10 P. M. of the 27th."

APRIL.

With the exception of the first three and the last four days of the month, the temperature was exceptionally uniform and moderately high. The month opened with a cool wave which spread over the State during the first three days, resulting in minimum temperatures ranging from 11° to 18° over the northern district on the 2d; from 8° in west central to 24° in the east central district on the 2d and from 14° to 24° in the southern district on the 2d and 3d. From the 3d to the 27th the minimum temperatures ranged from 30° to above 50° and the maximums from 50° to above 90°, the warmest days being the 13th, 19th and 22d. From the 27th to the close of the month the temperature was unseasonably low and below freezing on one or more days in all parts of the State.

The precipitation was generally below the normal, but there was an excess in a few localities, due to heavy local showers. The heaviest rainfall was at Inwood, Lyon county, where a severe local storm occurred on the 23d, accompanied by destructive winds, heavy rain and some hail. The least rainfall was reported from the counties along the Missouri river from Monona southward where the monthly amounts were less than an inch. There were but three periods during the month in which the rainfall was general, viz.: 5th to 8th, 17th to 18th and 23d to 28th, and, as the average amount of sunshine was above the normal, the conditions were exceptionally favorable for work in the fields. The seeding of small grain was practically completed at the beginning of the third decade, and at the close of the month more than the usual amount of ground had been prepared for corn. Up to the 27th the prospects for a fruit crop were never better, but the frosts and freezing temperatures during the last three days of the month did considerable damage, especially in southern counties.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 118 stations, was 50.5°, which is 2.0° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 48.4°, which is 1.6° above the normal; Central section 50.5°, which is 2.0° above the normal; Southern section, 52.5°, which is 2.2° above the normal. The highest monthly mean was 55.8° at Corning, Adams county, and the lowest monthly mean 46.6° at Sibley, Osceola county. The highest temperature reported was 91° at Onawa, Monona county, on the 19th; the lowest temperature reported was 8° at Fort Dodge, Webster county, on the 2d. The average monthly maximum was 83.0°, and the average monthly minimum was 15.9°. The greatest daily range was 54° at Sibley, Osceola county. The average of the greatest daily ranges was 41.7°.

PRECIPITATION. The average precipitation for the State, as shown by the records of 125 stations, was 2.24 inches, which is .59 inch below the normal. By sections the averages were as follows: Northern section, 2.78 inches, which is .31 inch above the normal; Central section, 2.30 inches, which is .57 inch below the normal; Southern section, 1.63 inches, which is 1.51 inches below the normal. The greatest amount, 4.59 inches, occurred at Inwood, Lyon county, and the least, .67 inch, at Little Sioux, Harrison county. The greatest amount in twenty-four hours, 2.42 inches, occurred at Pella, Marion county, on the 23d. Measurable precipitation occurred on an average of eight days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was fourteen; partly cloudy, eight; cloudy, eight. The duration of sunshine was above the normal, the percentage of the possible amount being seventy-five at Charles City; sixty-two at Davenport; sixty-two at Des Moines; sixty-two at Dubuque; fifty-nine at Keokuk, and seventy at Sioux City.

WIND.—Northwest winds prevailed. The highest velocity reported was fifty miles per hour from the Northwest, at Sioux City, Woodbury county, on the 25th.

MAY.

The cool wave which spread over the State during the last three days of April continued until the 3d of May, causing heavy to killing frost in all parts of the State on the 2d which resulted in further injury to fruit and garden truck. From the 3d to the close of the month there were no decided changes in temperature, it being quite moderate and uniform. The average for the month was only 0.7° below the normal for May. The most striking features of the weather of the month were the abnormally heavy rainfall and the frequency of the showers. Rain fell in some parts of the State on every day of the month, and the average number of days on which .01 inch or more fell at each station, was 15. The average amount of precipitation was 8.34 inches, which is 3.84 inches above the normal. This record has been exceeded in May but twice during the past 19 years, viz: 1892 and 1903 with an average amount of 8.77 and 8.55 inches respectively. The average amount of rainfall for May, 1903, was only .21 inch more than the average amount for this month, but the damage by floods was far in excess of that of this year. The maximum stage of the river at Des Moines in May, 1903, was 10.4 feet higher than the maximum stage this month, and the difference is due to the fact that in the spring of 1903 the ground was thoroughly saturated with moisture and all lakes, creeks and sloughs were filled wih water which fell during the summer and autumn of 1902, so that when the heavy rains came in May the surplus water soon found its way into the rivers causing the most disastrous floods on record in this state. At the beginning of this month the ground in the larger part of the State was extremely dry but friable and in the best of condition to absorb and store up large quantities of water, thereby preventing its rapid escape to the rivers. There has, however, been considerable damage done to crops, by flooding the low bottom lands, but the greatest damage done was in preventing the completion of corn planting and the cultivation of the early planted fields. There was about 20 per cent of the corn area yet to plant at the close of the month, and it is probable that a portion of this will have to be abandoned or seeded to millet or other late forage crops. There was also a great deal of replanting to be done due to floods and washing, but the general condition was considerally better than it was at the close of May, 1907. All small grains, grass and potatoes have made very rapid growth and the prospects for these crops are much better than they have been at the close of May for several years.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 59.4°, which is 0.7° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 57.8°, which is 0.6° below the normal; Central section, 59.7°, which is 0.5° below the normal; Southern section, 60.8°, which is 0.8° below the normal. The highest monthly mean was 63.2°, at Keokuk, Lee county, and the lowest monthly mean 55.2°, at Rock Rapids, Lyon county. The highest temperature reported was 93°, at Fort Dodge, Webster county, on the 16th and 20th; the lowest temperature reported was 13°, at Washta, Cherokee county, on the 2d. The average monthly maximum was 86.6°, and the average monthly minimum was 24.7°. The greatest daily range was 48°, at Allerton, Wayne county. The average of the greatest daily ranges was 38.3°.

PRECIPITATION.—The average precipitation for the State, as shown by the records of 125 stations, was 8.34 inches, which is 3.84 inches above the normal. By sections the averages were as follows: Northern section, 8.04 inches, which is 3.49 inches above the normal; Central section, 7.46 inches, which is 2.99 inches above the normal; Southern section, 9.53 inches, which is 5.06 inches above the normal. The greatest amount, 14.33 inches, occurred at Fort Madison, Lee county, and the least, 4.33 inches, at Belle Plaine, Benton county. The greatest amount in 24 hours, 4.80 inches, occurred at Fort Madison, Lee county, on the 28th. Measurable precipitation occurred on an average of 15 days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 9; partly cloudy, 11; cloudy, 11. The duration of sunshine was below the normal, the percentage of the possible amount being 49 at Davenport; 50 at Des Moines; 49 at Dubuque; 58 at Keokuk, and 58 at Sioux City.

WIND.—Southeast winds prevailed. The highest velocity reported was 60 miles per hour from the Northeast, at Sioux City, Woodbury county, on the 16th.

TORNADOES AND SEVERE WIND STORMS IN MAY.

The past month has furnished more than the usual number of wind storms for the state. While the amount of damage to property has been considerable, yet, fortunately, densely populated towns were missed, and only one death has resulted. The most severe storms occurred on the 11th and 12th, though from the 21st to the 29th local storms occurred in various sections of the state, causing damage to small buildings, windmills, trees, etc.

In each case the storms accompanied quite well developed cyclonic areas which were passing over the Mississippi Valley. On the afternoon of the 11th a tornado occurred in Dubuque and Delaware counties. It apparently originated about six miles north of Cascade, on the south border of Dubuque county, about 1 o'clock, and moved northwestward toward Worthington, then northward over Dyersville, from which place its course was northeast, the last point of contact being at Holy Cross. Mr. B. C. Wise, at Cascade, reports that the storm path was about 150 feet wide, and that the position of objects, laid prone by the wind, indicates that there was no whirling motion, but that it soon widened to a half mile and assumed the tornado type. The Dyersville Commercial, of May 15th, gives a detailed account of the damage done. The greatest destruction occurred before passing Worthington. Two farms, John Mauser's and John Durga's, were stripped of barns, sheds and corn cribs. The havoc wrought on Mr. Durga's farm is expressed in the words of the "Commercial:" "There was not enough lumber left to build a hen-house." There was considerable damage done at Dyersville and Holy Cross, but the losses were minor ones. At about the same hour a storm with the appearance of a tornado, struck seven miles north of Muscatine, but its path was short and the damage was not great.

The most destructive storm, and the one concerning which reports are most complete, occurred on the 12th, over a strip of country extending from Watson, Mo., to a point about six miles northwest of Clarinda, crossing the southeastern corner of Fremont county, west of Northboro and Coin, skipping a space from a point due west of Coin, but striking again six or eight miles west of Clarinda. In Fremont county all buildings on the farms of Will and Bert Higgins, and also a schoolhouse, were destroyed, while in Page county, John Wieland, E. L. Benedict, Claus Myers, Geo. Dalbey, Tom Anderson and Cliff Carpenter lost all their buildings. In some instances nothing was left, while in others the wrecks were left on the ground.

To an observer in front of the storm, debris of all descriptions could be seen whirling in the air. Many peculiar pranks of the wind are reported. A horse was left unhurt in a cellar where the family had taken refuge. The storm seemed to show its greatest fury at the Myers home, where, on the southwest side of a large oak tree, straws were driven into the bark a quarter of an inch; a rock weighing more than a ton left standing on a sled was moved with the sled about fifty feet to the southwest; soil was removed from the fields to a depth to which it had been plowed; an iron pump was taken from a cistern; the rim of a wheel from a new wagon destroyed on the Myers farm was dropped into the cellar at Dalbey's place after the house had been carried away. Mr. Myers, as quoted in the Clarinda Herald, from which paper detailed accounts are obtained, says that in a moment the house moved and then settled back, while a second later it was whisked away completely; at a point six or eight miles west of Clarinda a rain of boards and shingles occurred, with a coating of ice on much of the debris.

Meager reports of a storm over western Plymouth county indicate that a tornado of considerable violence passed over that section on the 16th. On the 21st a storm, more or less general over southern Iowa, assumed at Albia the aspects of a tornado. It was here the only fatality of storms occurred. Mr. J. M. Taylor was killed by a falling building. The roof of the Grant school building was torn off and crashed through to the rooms below, but fortunately it was just before the morning assembly of the school. On the 24th to 26th wind squalls damaging small buildings and windmills occurred at various places over the northwest half of the state, and on the 28th at Fort Madison.

JUNE.

The average temperature of June for the state was 1.7° below the normal. The month opened with a cool wave which was followed from the 5th to the 7th by a slight excess in temperature, but from the 8th to the 17th the weather was unseasonably cool. The minimum temperature was below 40° at many stations in the northern part of the state on the 15th and light frost occurred in several localities. The warmest period was from the 18th to the 23d, when the maximum temperature ranged from 85 to 94 degrees. The average rainfall was 5.66 inches, which was 1.14 inch above the normal for June. Rain fell at one or more stations in the state every day from April 21st to June 30th or 71 consecutive days. The largest amounts of rainfall were reported from the northern districts and especially in the west portion of the upper valley of the Des Moines river. Plover, in Pocahontas county, reported a total amount of 11.88 inches, 4.08 inches of which fell on the 18th in 24 consecutive hours. There were numerous severe thunderstorms accompanied by wind squalls and some hail, but the most severe and destructive storm occurred near Charles City in Floyd county on the afternoon of the 7th. A hail, wind and rain storm swept over the northeastern counties on the evening of the 20th. A detailed account of these storms will be found on another page of this report. The frequent and heavy rains prevented work in the fields, kept the rivers up to flood stages, flooded all low and flat lands and caused considerable washing of the soil on hillsides, and, as a result, farmers in some sections of the state were planting or replanting corn up to the close of the month. Many fields were abandoned and the acreage of corn has been reduced a little over five per cent as compared with the area planted last year. All the early planted corn on high and well tilled land shows a good stand, has a good color, and is exceptionally clean considering the adverse conditions, and some fields were laid by before the end of the month. All small grains are generally in good condition and give promise of fairly good yields. Winter wheat and rye were ready for harvest in the southern counties at the close of the month, and all kinds of small grains were beginning to head in northern counties. The excessive moisture and moderately cool weather have been very beneficial for grass, and the hay crop will be abnormally heavy. Clover hay making was begun during the third week in June and most of it was put up in good condition despite the frequent showers. Potatoes and garden truck have also made very thrifty growth. There was a fair crop of cherries in the northern counties, but the yield was light in southern districts. Strawberries were generally good and raspberries and blackberries give promise of an average crop, but the apple crop will be light in all parts of the state.

TEMPERATURE. The monthly mean temperature for the State, as shown by the records of 114 stations, was 67.1°, which is 1.7° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 65.5°, which is 1.8° below the normal; Central section, 67.6°, which is 1.4° below the normal; Southern section, 68.2°, which is 1.8° below the normal. The highest monthly mean was 71.9, at Burlington, Des Moines county, and the lowest monthly mean, 62.9°, at Sibley, Osceola county. The highest temperature reported was 94°, at Clinton and Decorah, in Clinton and Winneshiek counties, on the 22d and 23d; the lowest temperature reported was 35°, at Elma, Howard county, on the 15th. The average monthly maximum was 88.5, and the average monthly minimum was 42.9. The greatest daily range was 45°, at Elkader, Clayton county. The average of the greatest daily ranges was 31.8.

PRECIPITATION. The average precipitation for the State, as shown by the records of 121 stations, was 5.66 inches, which is 1.14 inches above the normal. By sections the averages were as follows: Northern section, 6.79 inches, which is 2.22 inches above the normal; Central section, 5.06 inches, which is .69 inch above the normal; Southern section, 5.14 inches, which is .52 inch above the normal. The greatest amount, 11.88 inches, occurred at Plover, Pocahontas county, and the least, 1.77 inches, at Sigourney, Keokuk county. The greatest amount in twenty-four hours, 4.08 inches, occurred at Plover, Pocahontas county, on the 18th. Measurable precipitation occurred on an average of 13 days.

SUNSHINE AND CLOUDINESS. The average number of clear days was 12; partly cloudy, 10; cloudy, 8. The duration of sunshine was below the normal, the percentage of the possible amount being 64 at Davenport; 53 at Des Moines; 63 at Dubuque; 62 at Keokuk, 52 at Sioux City, and 54 at Omaha, Neb.

WIND. Southeast winds prevailed. The highest velocity reported was 60 miles per hour from the southwest, at Sioux City, Woodbury county, on the 22d.

TORNADOES AND SEVERE STORMS IN JUNE.

While severe storms were no more frequent in June than in May, yet the financial loss, due to the destruction of property, is greater. On June 7th and 20th, the northeastern section of the State was visited by destructive storms. Tornadoes did considerable damage at Charles City, Lisbon and Mount Vernon, on the 7th, and on the 20th a wind and rain storm with heavy hail struck across the corner of the State from northern Howard county, over Cresco, southeastward to McGregor, in Clayton county. Other wind squalls, occurred over the western and central portions of the State on June 12th, 19th, 23d and 28th. A report of the tornado at Charles City, as given by Mr. McGann, official in charge of the Local Office of the Weather Bureau at that place, follows:

"On the afternoon of June 7, 1908, a most destructive tornado passed through the eastern portion of the city. It was first observed on the farm of August Huxol, about seven miles southwest. Here the machine house and dwelling were badly wrecked. A few miles further it passed over the farm of Lacoure and Baldwin, completely wrecking the dwelling houses and all out buildings, only the floors remaining. It reached the southwesterly edge of the city at 5:00 p. m. (90 Meridian time) and razed the dwelling house of J. Z. Wright. From this point it cut a path of from 50 to 100 yards wide, raising some buildings from their foundations and wrecking many others, so that they were uninhabitable. The dwelling houses on either side of the storm's path were more or less damaged; all the window glass was blown outwards. About twenty-five dwelling houses were damaged and five totally destroyed. A large number of shade trees were torn up by the roots and others twisted and split. On the east side, the trees generally lay toward the northeast, and on the west side toward the northwest. The funnel shaped cloud, rising and falling as it moved rapidly in a northeasterly direction, was accompanied by a loud roaring noise similar to continuous thunder. The path of the storm was about eight miles long and about one hundred yards wide. The damage done is estimated at $25,000. The meteorological conditions that prevailed at this station were cloudy and very sultry weather, low and nearly stationary barometer, high humidity, 97%, and gentle southwest to south winds. A light sprinkle of rain fell from 7:50 to 7:55 a. m. and from 11:15 a. m. to 12:10 p. m. These light showers were followed by a feeble thunderstorm southwest of station from 1:10 to 1:53 p. m. Distant thunder was heard in the southwest at 4:20 p. m., rain following from 4:50 p. m. falling very heavy from 5:00 to 5:04 p. m., and ending at 5:12 p. m. At this hour the storm has entirely disappeared in the northeast. One death resulted from the storm. Mr. Brock was killed by a falling chimney."

The reports of the storm in southeastern Linn county, while indicating a storm of tornado form, do not show the destructiveness of that which occurred in Floyd county, the loss did not extend much beyond the overturning of light buildings and windmills and the tearing of limbs from trees.

A strip of country about fifteen miles wide, extending from Cresco, Howard county, to McGregor, Clayton county, suffered greatly from damage to crops, by wind, rain and hail. Cattle and hogs were killed by the hail or driven by the storm into the creeks and drowned. The greater loss, however, was sustained at South McGregor. Here lumber from the lumber yards, and any loose objects that would float, were washed into the Mississippi river. Damages to property alone are estimated to reach near 40,000 dollars. The deposits of mud in many business houses was from three to four feet, and from a sanitary standpoint the situation was rendered serious. Business was stopped for more than a week. At a few places in the track of the storm the hail was of such size, and was driven with such force by the wind as to break siding on residences.

JULY.

July, 1908, will be remembered as one of the most favorable harvest months on record, the average temperature and precipitation being slightly below the normal with an excess of sunshine. The average daily deficiency in temperature was 0.4°, and the average total deficiency in rainfall was .78 inch. The first eight days of the month were unseasonably cool with minimum temperatures down to 42° at several stations in the northwestern counties on the 7th and 8th. The warmest periods of the month were from the 10th to the 13th and 28th to 30th, when the maximum temperatures were generally above 90°. The temperature during the remainder of the month was about normal. Rain fell at some station in the State every day during the month, but after the 7th the showers were so widely scattered and the intervals between showers were so great that there was an average for the month of but eighty days with rain. The heavy and frequent rains which began on April 21st continued until July 7th, but since then the only period of general rains was on the 16th and 17th, and the amounts of precipitation in that period were generally small except over the Missouri divide and the northern counties, where the amounts at many stations ranged from 1.00 to 5.00 inches. There were a few severe wind and hailstorms, but not as many as is usual during July. The worst storm of which we have a record occurred in Ida county on the afternoon of the 26th, causing considerable damage in the vicinity of Arthur, at which place the storm track was about five rods wide. It struck the town about 1 p. m. and lasted but a few seconds, but blew down many sheds and other light buildings, windmills and trees. The character of the storm approached that of a tornado, but there was no funnel-shaped cloud observed. Heavy hail fell in many localities during the passage of the storm across the county and did serious damage to crops.

A severe hailstorm occurred in the vicinity of Woodburn, Clarke county, on the 17th, resulting in some damage. After the first week of the month the weather was ideal for haying, harvesting and the growth of corn. The moderately high temperatures, excess of sunshine, and the long intervals between showers enabled farmers to secure the large crop of hay in the best of condition.

Small grain harvest began during the second week of the month and was nearly completed, and thrashing operations were in full progress before the close of the month. The yield and quality of wheat especially winter wheat, was good. The yield of oats ranged from poor in southern counties to fair to good in central and northern counties, but for the State the yield will be considerably below the average. The quality, however, was good, notwithstanding the fact that red rust was becoming quite general at the time harvest began. Corn made an abnormally rapid growth and in many fields was up to the average condition, but for the State at large the crop is very uneven. On low and flat fields, which were previously flooded, corn is decidedly below the average in growth, but has good color, is growing rapidly and, with continued warm weather and occasional showers, will make a fair crop, if frosts do not come before the average date.

Pastures and potatoes have remained in good condition, but are beginning to show the effects of dry weather and would be benefited by a good rain. The apple crop will be very small.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 114 stations, was 73.0°, which is 0.4° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 71.8°, which is 0.3° below the normal; Central section, 73.3°, which is 0.4° below the normal; Southern section, 74.0°, which is 0.5° below the normal. The highest monthly mean was 78.3°, at Fairfield, Jefferson county, and the lowest monthly mean, 69.2°, at Sibley, Osceola county. The highest temperature reported was 100°, at Rockwell City and Odebolt, in Calhoun and Sac counties, on the 11th and 29th; the lowest temperature reported was 42°, at Inwood, Larrabee, Washta and Dows, in Lyon, Cherokee, and Wright counties, on the 7th and 8th. The average monthly maximum was 94.6°, and the average monthly minimum was 48.2°. The greatest daily range was 41°, at Fairfield, Jefferson county. The average of the greatest daily ranges was 31.7°.

PRECIPITATION.—The average precipitation for the State, as shown by the records of 123 stations, was 3.66 inches, which is .78 inch below the normal. By sections the averages were as follows: Northern section, 4.24 inches, which is .04 inch below the normal; Central section, 3.60 inches, which is .91 inch below the normal; Southern section, 3.13 inches, which is 1.41 inch below the normal. The greatest amount, 9.21 inches, occurred at Alta (near), Buena Vista county, and the least, .70 inch, at Oskaloosa, Mahaska county. The greatest amount in twenty-four hours, 5.93 inches, occurred at Grand Meadow, Clayton county, on the 17th. Measureable precipitation occurred on an average of 8 days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 16; partly cloudy, 10; cloudy, 5. The duration of sunshine was near the normal, the percentage of the possible amount being 69 at Davenport; 67 at Des Moines; 63 at Dubuque; 73 at Keokuk; 66 at Sioux City, and 69 at Omaha, Neb.

WIND.—Southwest winds prevailed. The highest velocity reported was 36 miles per hour from the southwest, at Keokuk, Lee county, on the 16th.

AUGUST.

The mean temperature for the month was slightly below the normal; the average daily deficiency ranged from 2.1° in the northern districts to

1.5° in the southern districts. The warmest period of the month was between the 2d and the 5th, inclusive, when the maximum temperatures ranged from 88° to 101°; the highest occurring in Mahaska and Wapello counties on the 3d. The coolest period was from the 20th to the 24th, inclusive, the lowest temperature occurring on the 24th. During the past 18 years, there have been eleven warmer Augusts and seven that were slightly cooler. The rainfall was above the normal in all districts. Most of the precipitation came from local showers and thunderstorms, which were quite well distributed as to numbers, but the heaviest rain fell over the Missouri divide, thence eastward over the northern portion of the southern districts. There was but one county in the State, Lyon, which reported less than two inches. While the average amount of rainfall for the month was in excess of that for August, 1907, the average number of clear, partly cloudy, cloudy and rainy days were the same as in August of last year, which indicates, as it did then, that there was an excess of sunshine.

The weather was favorable for the growth of vegetation and for farm work. Harvest was finished and threshing well advanced at the close of the month. Local showers in a few localities interfered with threshing operations and some grain, in shock, was damaged by excessive moisture, but the percentage of loss was small. Corn made rapid advancement toward maturity but is still very green. Pastures were exceptionally good for the time of year, and all stock is in good condition. The aftermath in meadows made good growth and the second crop of hay will be heavier than normal. The indications are very favorable for a good crop of clover seed.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 114 stations, was 70.0°, which is 1.8° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 68.2°, which is 2.1° below the normal; Central section 70.1°, which is 1.8° below the normal; Southern section, 71.8°, which is 1.5° below the normal. The highest monthly mean was 74.5°, at Keokuk, Lee county, and the lowest monthly mean 66.2°, at Sibley, Osceola county. The highest temperature reported was 101°, at Oskaloosa and Ottumwa, in Mahaska and Wapello counties, on the 3d; the lowest temperature reported was 38°, at Atlantic, Cass county, on the 24th. The average monthly maximum was 94.1°, and the average monthly minimum was 45.1°. The greatest daily range was 45°, at Atlantic, Cass county. The average of the greatest daily ranges was 34.8°.

PRECIPITATION. The average precipitation for the State, as shown by the records of 123 stations, was 4.77 inches, which is .78 inch above the normal. By sections the averages were as follows: Northern section, 4.03 inches, which is .51 inch above the normal; Central section, 5.07 inches, which is 1.02 inches above the normal; Southern section, 5.21 inches, which is .81 inch above the normal. The greatest amount, 10.58 inches, occurred at Pella, Marion county, and the least, 1.35 inches, at Rock Rapids, Lyon county. The greatest amount in twenty-four hours, 6.02 inches, occurred at Stuart, Guthrie county, on the 15th. Measureable precipitation occurred on an average of 9 days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 17; partly cloudy 9; cloudy 5. The duration of sunshine was slightly above the normal, the percentage of the possible amount being 70 at Davenport; 65 at Des Moines; 68 at Dubuque; 77 at Keokuk; 66 at Sioux City, and 64 at Omaha, Neb.

WIND.—South and southwest winds prevailed. The highest velocity reported was 40 miles per hour from the northwest, at Sioux City, Woodbury county, on the 15th.

SEPTEMBER.

The month of September, 1908, will go on record as having had the longest drouthy period of any September since the establishment of the Iowa Weather and Crop Service; and also for its long period of high temperatures and cloudless weather. The mean temperature was 4.2° above the normal, which has been exceeded but once, in 1897, during the past eighteen years. The temperature was above normal every day up to the 25th, except from the 1st to the 3d, and on the 7th, when it was slightly below normal, due to moderately low temperature during the nights. From the 4th to the 25th, inclusive, the maximum temperatures ranged from 80° to above 90°, and the minimum temperatures were correspondingly high. A cool wave passed over the state between the night of the 26th and the close of the month, which resulted in heavy to killing frosts on the mornings of the 28th and 29th, with freezing temperatures over the larger part of the State on the latter date.

The average precipitation was 1.20 inches, or 2.21 inches below the September normal. With the exception of a very few light showers in the eastern counties on the 4th and 5th, the northeastern counties on the 13th and in the northwestern counties on the 23d, there was no rain in the State from the night of August 31st to the night of September 25th, making the longest period in any September without rain on record.

Copious showers occurred in all parts of the State between the 26th and 28th; the heaviest rainfall being in the eastern half of the State. The high temperature, nearly cloudless skies, and the absence of rainfall made ideal weather conditions for ripening the corn and maturing the clover seed crop, but the drouthy conditions were severe on pastures, late potatoes and apples. Before the middle of the month, fall plowing was generally discontinued, pastures were dry and brown and stock water was getting scarce in many localities, and by the 25th the soil was dry and dusty. The water in all streams was lower than it had been in many years, and in some sections of the State, the stage of rivers was said to be lower than ever before known. While hot and dry weather was injurious to pastures and a few late crops, it was the salvation of the corn crop, and the bulk of it was safe from the effects of frost by the 25th. Some of the crop in late planted fields was, however, pushed toward maturity too rapidly to make the best corn, but better thus than to have had it frozen while in the milk or dough stage, as it surely would have been had the weather conditions been normal up to the time of the average date of the first killing frost. As it was, probably 90% of the crop escaped any material injury by the frost and freezing temperature, and the remainder, while light and chaffy, will have considerable value for feed. The dry weather was also ideal for finishing threshing and haying and harvesting the clover and seed crop.

A large second crop of hay was put up in excellent condition, and the clover seed crop is probably larger than ever before harvested in this State. Considerable seeding of winter grain was done during the forepart of the month, and, if the dry weather had not prevented plowing, there would have been a large increase in the acreage of winter wheat.

The rains during the last few days of the month will revive pastures and permit the resumption of plowing, but the amounts of precipitation were not large enough to have any more than a slight temporary effect on the water supply.

TEMPERATURE.—The monthly mean temperature for the State, as shown by the records of 112 stations, was 67.9°, which is 4.2° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 67.1°, which is 5.0° above the normal; Central section, 67.8°, which is 4.2° above the normal; Southern section, 68.7°, which is 3.2° above the normal. The highest monthly mean was 71.6°, at Onawa, Monona county, and the lowest monthly mean 64.6°, at Mason City, Cerro Gordo county. The highest temperature reported was 98° at Ridgeway, Winneshiek county, on the 11th; the lowest temperature reported was 20°, at Washta, Cherokee county, on the 29th. The average monthly maximum was 91.8°, and the average monthly minimum was 26.9°. The greatest daily range was 46°, at Cedar Rapids, Linn county. The average of the greatest daily ranges was 36.2°.

PRECIPITATION.—The average precipitation for the State, as shown by the records of 121 stations, was 1.20 inches, which is 2.21 inches below the normal. By sections the averages were as follows: Northern section, 1.19 inches, which is 2.22 inches below the normal; Central section, 1.20 inches, which is 2.04 inches below the normal; Southern section, 1.21 inches, which is 2.36 inches below the normal. The greatest amount, 3.46 inches, occurred at Grand Meadow, Clayton county, and the least, .25 inch at Jefferson, Greene county. The greatest amount in twenty-four hours, 2.93 inches, occurred at Independence, Buchanan county, on the 26th and 27th. Measureable precipitation occurred on average of three days. The average snowfall, unmelted, was trace.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 21; partly cloudy 6; cloudy 3. The duration of sunshine was above the normal, the percentage of the possible amount being 76 at Davenport; 79 at Des Moines; 68 at Dubuque; 79 at Keokuk; 78 at Sioux City, and 78 at Omaha, Neb.

WIND.—South winds prevailed. The highest velocity reported was 37 miles per hour from the south, at Sioux City, Woodbury county, on the 25th.

OCTOBER.

After the rains on September 26th to 29th, inclusive, drouthy conditions again prevailed until the night of October 19th, there being no rain between those dates except light showers on the 5th and 6th. During the first and second decades of the month the temperature was above normal, the maximum temperatures ranging from 52° to 89°, and the minimum from 31° to 65°; but during the last decade, the temperature was considerably lower, the average for the month being slightly below the normal. From the 19th to the 28th, inclusive, the weather was cloudy with almost continuous rain. The average rainfall for the month was considerably above the normal for October and has been exceeded but four times during the past 19 years. Snow flurries were quite general over the western half of the State on the 22d and 23d, but the amounts of snowfall were small except over the southwestern counties where they ranged from one to eleven inches, which is unusual for that section of the State so early in the season.

There was a deficiency in the amount of sunshine, notwithstanding the fact that there was a large excess during the first half of the month. The dry weather and brisk winds during the first half of the month were favorable for drying out the corn crop and husking began between the 15th and 18th, and more than the usual amount would have been cribbed during October but for the rains between the 19th and 28th which prevented all field work. Husking was resumed on the 29th, and it is estimated that fully 15% of the crop had been harvested by the close of the month, at which time the work was being vigorously pushed.

The rains near the close of September revived pastures and put the soil in good condition to plow, and considerable plowing and fall seeding was done during the first ten days of October when it again became too dry, and that work was suspended until after the 27th, since which time plowing has been resumed. The long continued and, in many places, heavy rains between October 19th and 28th, replenished the water supply, revived the pastures and meadows and put the soil in excellent condition for winter.

Temperature.—The monthly mean temperature for the State, as shown by the records of 110 stations, was 51.1°, which is 0.8° below the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 49.6°, which is 0.5° below the normal; Central section, 51.2°, which is 0.6° below the normal; Southern section 52.6°, which is 1.1° below the normal. The highest monthly mean was 54.4°, at Burlington and Keokuk, Des Moines and Lee counties, and the lowest monthly mean 46.6°, at Sibley, Osceola county. The highest temperature reported was 89°, at Clarinda, Ottumwa, Ames and Woodburn, Page, Wapello, Story and Clarke counties, on the 14th and 16th; the lowest temperature reported was 17°, at Atlantic, Cass county, on the 12th. The average monthly maximum was 82.9°, and the average monthly minimum was 24.7°. The greatest daily range was 58°, at Clarinda, Page county. The average of the greatest daily ranges was 38.5°.

Precipitation.—The average precipitation for the State, as shown by the records of 118 stations, was 3.38 inches, which is 1.03 inches above the normal. By sections the averages were as follows: Northern section, 3.37 inches, which is 1.10 inches above the normal; Central section, 3.13 inches, which is .69 inch above the normal; Southern section, 3.64 inches, which is 1.29 inches above the normal. The greatest amount, 8.83 inches, occurred at Lamoni, Decatur county, and the least, .58 inch, at Clinton, Clinton county. The greatest amount in twenty-four hours, 2.96 inches, occurred at Plover, Pocahontas county, on the 24th. Measurable precipitation occurred on an average of 8 days.

SUNSHINE AND CLOUDINESS.—The average number of clear days was 16; partly cloudy, 6; cloudy, 9. The duration of sunshine was below the normal, the percentage of the possible amount being 67 at Davenport; 60 at Des Moines; 57 at Dubuque; 62 at Keokuk; 50 at Sioux City, and 57 at Omaha, Neb.

WIND.—South winds prevailed. The highest velocity reported was 48 miles per hour from the south, at Sioux City, Woodbury county, on the 19th.

DROUTHS IN IOWA.

September, 1908, will go on record as having had the longest period without rain of any September since the establishment of weather stations in this state. With the exception of a few light showers in small sections of the state on the 5th, 13th and 23d, there was practically no rainfall from the night of August 31st to the night of September 25th, making, at most of the stations in this section, twenty-five rainless days. Copious rains fell in all parts of the state between the night of the 25th and the 28th. During the dry period the temperature was considerably above the normal and the weather was almost cloudless. The atmosphere was, however, more or less hazy, and over the eastern counties light to dense smoke was observed from the 14th to the 23d, presumably due to forest fires in the upper lake region. From the 4th to the 25th, inclusive, the maximum temperatures ranged from 80 to above 90°, and the night temperatures were correspondingly high.

Previously to September 1st, the conditions had been favorable for abundance of soil moisture; there being an excess of precipitation for the state of 3.84 inches in May, 1.14 inches in June and .78 inches in August, and a deficiency of .78 inch in July, making a total excess of 4.98 inches for the four months, May to August inclusive. All ponds, streams and sloughs were well filled with water and in May and June the rivers approached the flood stage, so that there was more than the normal amount of moisture in the soil on September 1st and all wells furnished a good supply of water during the entire month.

The effect of the dry, hot weather during September was very injurious to pastures, late potatoes, garden truck, buckwheat, late fruits and the surface water supply. By the 15th pastures were brown and the soil was too dry and hard to plow, and by the 25th the fields were dusty and most of the ponds, sloughs and small streams were dry. The stage of water in all rivers was low and in some, the stage was said to be the lowest ever before known.

While the effects of the drouth were serious and damaging to pastures, late potatoes and apples, the beneficial effects to corn more than overbalanced the injury done, and it may as well be said that the dry weather was of great benefit to this state. Corn, the principal crop in this section, was unusually late due to the heavy and continuous rains during the latter part of May and June and the fore part of July, which retarded planting and prevented the cultivation of early planted fields, and as a result all corn was green and but little of it had begun to show any signs of maturity by September 1st. After September 1st corn was rapidly pushed toward maturity and by the 15th of the month a large percentage of the early planted fields were safe from the effect of frost, and the late planted fields were making rapid progress. By the 25th fully 90 per cent of the crop was far enough advanced to escape any material injury from the frost which occurred on the 28th and 29th, and the remainder of the crop was in most cases well dented so that it will have considerable value for feed.

Agricultural interests in this state are more frequently and more extensively injured by excessive moisture than by drouthy conditions. The last serious drouth prior to 1908 was in the summer of 1901, and then the damage to crops was largely due to continuous and excessively high temperatures and hot winds coming as they did during the period of pollination and earing of corn. From April 1st to August 31st of that year, the monthly deficiency of rainfall for the state was as follows, viz: April, 1.04 inches; May, 2.15; June, .81; July, 2.10, and August, 2.70 inches, making a total deficiency for the five months of 8.80 inches. The monthly mean and daily maximum temperatures of July were higher than ever before known, the monthly mean for the state being 82.4°, or 8.7° above the normal, and the daily maximum temperatures from the 1st to the 26th, inclusive, were very near or above 100°, the absolute maximum being 113° at Sigourney. The dry, hot weather was very damaging to pastures and garden truck and materially reduced the yield of corn for the year. The following is quoted from the Monthly Report of the Iowa Section for September, 1897, and shows the effects of the drouth and hot winds during that month: "This month brought a marked change and the summary ending of a peculiar and fitful crop season. The first half broke all former records of September whether for the corresponding period, by abnormally high temperatures, intense insolation, hot southerly winds and severe drouthy conditions. At the central station the sum of the excess in temperature was 228° for the first 15 days, making a daily average of over 15° above the normal. During 12 days the maximum temperatures ranged from 90 to 98°. This extreme heat and general aridity produced a notable effect upon immature crops, and all forms of vegetable life. Most of the early planted corn, which with normal temperature and moisture would have required two to four weeks to ripen in the best condition, was swiftly hurried to maturity, with more or less detriment to its quality. The transformation from milk and dough to the dented stage was too sudden to secure normal development of the grain. All corn planted betimes on deep, rich soil, well cultivated and possessing a good storage of moisture, came through with a fair average yield, and is but little impaired in quality. But the crop on exposed uplands, and on thin soils, generally suffered extensive damage by "firing" and premature drying up.

"Frosts were noted in the northern districts on September 17th and 18th, and on the morning of the 20th a killing frost was reported in all districts. The bulk of the corn crop, however, was beyond the danger line, and probably less than 10 per cent was in condition to receive any appreciable injury from the frost. But potato vines and tender garden truck were cut down in all exposed localities. As a result of the dry weather, hot winds and early frosts, the potato yield has been greatly reduced everywhere, and in some sections the crop of late potatoes is well nigh a total failure.

"The pastures and meadows have suffered the most damaging effects of the drouth and heat. Fall pasturage was almost wholly used up, and farm stock have been quite generally fed from the corn fields, or from the forage reserves provided for the winter season.

"Fall plowing and sowing winter grain were retarded by the dry and hard condition of the soil, and the prospective acreage of winter wheat has been decreased thereby.

"With all its drawbacks and abnormal conditions, however, the season of 1897 has brought forth liberal returns for the labors of faithful tillers of the soil. The final roundup will show that the state has produced a bountiful surplus for export to less favored regions."

"The most disastrous drouth of which we have authentic record as having occurred in this state was in 1894, following as it did the dry year of 1893. There was a total deficiency in rainfall in 1893 of 5.06 inches, and in 1894 there was a deficiency of 10.71 inches. From May 1st, 1893, to August 31, 1894, there was a deficiency of 17.61 inches. During that period the rainfall was below the normal for every month except December, 1893, January, March and April, 1894, when there was an excess of .12 inch, .04, .11 and .24 inch respectively. The greatest deficiency was between May 1, 1894, and August 31, 1894, and by months was as follows, viz: May, 2.63; June, 1.85; July, 3.81; and August, 2.41, or a total deficiency of 10.70 inches for the four months. The climax of the drouth came in July when the average monthly rainfall for the state was only .63 inch, which is the smallest amount ever recorded in this state during any crop growing month. Over three-fourths of the state received less than half an inch of rain during the month and a number of localities reported only a trace. On the 25th, 26th and 27th of that month, the wind velocity was very high and the temperature was generally up to 100 degrees or above. Pastures were absolutely bare of anything on which stock could secure nourishment; all small streams, shallow wells and ponds, and many deep wells and large streams were dry and corn was badly "fired". Many farmers were forced to drive their stock to or haul water from streams several miles distant in order to keep the cattle alive, and feeding hay and grain was general. The yield of corn was only 12 bushels per acre which is the smallest yield of that crop ever known in this state.

In 1886 a drouth began in Iowa in May and continued during June, July and August, which was very severe during the last two months. The records of this office show that the rainfall during those months was as follows, viz: May, 4.01 inches, all but .74 inch falling during the first decade of the month; June, 1.21; July, .27; August, 1.10 inches, making a total of 3.32 inches from the middle of May to the end of

August. There was only .04 inch of rain fell during the 39 days from June 21st to July 29th, inclusive.

The precipitation charts in the National Weather Review show that the worst of the drouth was confined principally to Iowa, although parts of the adjacent states had a deficiency of rainfall during most of the summer.

The following is an extract from a description of the drouth in Iowa, furnished by Gustavus Hinrichs, M. D., then director of the "Iowa Weather Service":

"Since the middle of May Iowa has been subjected to a drouth, the most severe on record. Fortunately, the greater part of the state has been favored with rains sufficient to break the drouth temporarily toward the close of June. * * * * * * * * * * * *.

"THE DROUTH AT IOWA CITY.

"In the early summer of 1886, the last good rain fell on May 13th. Since that time we have had no rain reaching half an inch until August 4th. Thus we had no serviceable shower for 83 days. The total rains which fell in this interval were 0.02 inch during the last decade of May; 0.41 during the first, 0.17 during the second, and 0.25 inch during the third decade of June. During the entire month of July we had only one-tenth of an inch of rain here. The total rainfall during the 83 days of our drouth was 0.95 inch only. The normal rainfall for this part of our season is 10.32 inches. Our pastures have been brown for a long time, and burn readily from sparks of passing trains, unless cropped bare by stock. Meadows yielded a good crop of most excellent hay due to early rains, but the stubble remains brown and looks dead. A great deal of corn is stunted and cannot yield much of a crop, and where no ears have formed, will yield but little fodder. Small grain, especially oats, are good in grain and yield fair to good, where sown early to be developed by the spring rains; in that case the straw is good too, and thus will be quite an item in this winter's feed. It will be seen that even here, where the drouth is extreme, there is not a failure of crops, because our farming operations are sufficiently diversified to make a total failure almost an impossibility.

"THE BELT OF CONTINUOUS DROUTH.

"A belt running diagonally from northwest to southeast through Iowa marked the region of greatest drouth in the state, because no rain fell in this belt amounting to one inch during any ten days of this drouth. From Marshall county a branch of this belt goes east over Iowa and Johnson to Scott county. Throughout this forking belt the drouth has been the most severe, because continuous. In area this comprises probably one-tenth of the entire state. The description given above of the drouth at Iowa City will apply more or less to all parts of this belt."

In years gone by there have been many local drouths, covering a comparatively small area of the state and several that were general over this and adjacent states, but there are no authentic data at hand to verify the statements of the older inhabitants as to their severity.

NOVEMBER.

The weather during the larger part of November was very mild and pleasant, although the precipitation was above normal in all sections of the state. The rains, however, came in periods lasting but one or two days, and during the intervals there were long spells of fair weather.

The temperature was high to moderate during most of the month; the only periods of cold weather were between the 11th and 17th and on the 30th, and even then the cold was not excessive, there being no station in the state which reported a minimum temperature as low as zero. During the past eighteen years there have been only three Novembers with a higher mean temperature than was recorded during the past month, and but four during which temperatures below zero were not recorded. From the 2d to the 8th and from the 17th to the 25th the maximum temperatures ranged from 50° to above 70°; the highest occurring at most stations on the 18th.

Light and scattered rains fell on the 1st and general rains from the 22d to the 25th and on the 29th and 30th, with snow flurries on the 13th and 14th. The amounts of precipitation were small except from the 22d to the 25th, when they ranged from about half an inch to over two inches; the largest amounts being reported from the eastern counties. The conditions were unusually favorable for field and other outdoor work, except during and immediately after the rainy periods when the fields were too soft to haul heavy loads of corn.

Corn husking was rapidly pushed and nearly 90 per cent of that crop had been harvested by the close of the month, with only about 9 per cent reported as being soft. The rains have replenished the water supply, and all wells and streams now have a sufficient quantity to meet all demands during the winter. Considerable fall plowing was done during the month, and meadows, pastures and fall grains are reported as being in excellent condition.

Temperature.—The monthly mean temperature for the State, as shown by the records of the 115 stations, was 39.3°, which is 3.4° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 36.9°, which is 3.2° above the normal; Central section, 39.4°, which is 3.7° above the normal; Southern section, 41.5°, which is 3.3° above the normal. The highest monthly mean was 45.2, at Keokuk, Lee county, and the lowest monthly mean, 35.4°, at Britt and Sibley, Hancock and Osceola counties. The highest temperature reported was 80°, at Saint Charles, Madison county, on the 18th; the lowest temperature reported was 5°, at Sioux Center, Sioux county, on the 30th. The average monthly maximum was 69.1°, and the average monthly minimum was 12.9°. The greatest daily range was 55°, at Sibley, Osceola county. The average of the greatest daily ranges was 39.6°.

Precipitation.—The average precipitation for the State, as shown by the records of 122 stations, was 1.56 inches, which is .17 inch above the normal. By sections, the averages were as follows: Northern section, 1.53 inches, which is .22 inch above the normal; Central section, 1.45 inches, which is .02 inch above the normal; Southern section, 1.70

inches, which is .26 inch above the normal. The greatest amount, 3.31 inches, occurred at Clinton, Clinton county, and the least, .21 inch, at Pacific Junction, Mills county. The greatest amount in twenty-four hours, 1.90 inches, occurred at Leon, Decatur county, on the 24th.

The average snowfall, unmelted, was 1.4 inches, the average for the three sections being as follows: Northern section, 2.2 inches; Central section, 1.2 inches; Southern section, 0.9 inch. The greatest monthly snowfall, 7.0 inches, occurred at Sioux Center, Sioux county, and the greatest 24-hour amount, 5.0 inches, at Alton and Sioux Center, Sioux county, on the 25th.

Measurable precipitation occurred on an average of 5 days.

Sunshine and Cloudiness.—The average number of clear days was 14; partly cloudy, 7; cloudy, 9. The duration of sunshine was slightly above the normal, the percentage of the possible amount being 59 at Charles City; 57 at Davenport; 54 at Des Moines; 47 at Dubuque; 51 at Keokuk; 55 at Sioux City, and 62 at Omaha, Neb.

Wind.—Northwest winds prevailed. The highest velocity reported was 54 miles per hour from the northwest at Sioux City, Woodbury county, on the 30th.

DECEMBER.

The month of December was unusually mild and pleasant, there being no severe storms and but two or three days of very cold weather. The mean temperature was, however, 1.6° lower than in December, 1907, due to low minimum temperatures on a few days. During the past 18 years, there have been five Decembers with a higher mean temperature and five with a smaller average amount of precipitation. The month opened clear and cold with the minimum temperature nearly zero in the northern portions of the state on the 1st and 2d which was followed by warmer weather until the 5th, when snow began falling and continued during the night. The storm was general in all parts of the state and from one to seven inches of snow fell, making it the heaviest snow storm during the month, but, fortunately, there was but little wind and the drifting was slight and travel was not materially affected. A severe cold wave swept over the state on the afternoon and night of the 6th, resulting in temperatures below zero in all but the extreme eastern counties.

From the 8th to the 29th the weather was generally pleasant with moderate temperature. The month closed with high northwest winds and a cold wave. The corn harvest was finished early in the month under the most favorable conditions and there was some plowing done in the southeastern counties between the 20th and 30th. Stock was in the stalk fields during the entire month and are reported as being in excellent condition. As the ground was covered with snow during the coldest period, winter grain has not yet been injured.

Temperature.—The monthly mean temperature for the State, as shown by the records of 115 stations, was 27.2°, which is 3.6° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 24.0°, which is 3.1° above the normal; Central section, 27.4°, which is 3.6° above the normal; Southern section, 30.2°, which is 4.0° above the normal. The highest monthly mean was

33.4° at Keokuk, Lee county, and the lowest monthly mean was 19.5° at Northwood, Worth county. The highest temperature reported was 67° at Washington, Washington county, on the 14th; the lowest temperature reported was 17° below zero at Alton, Sioux county, and Dows, Wright county, on the 7th. The average monthly maximum was 52.2°, and the average monthly minimum was 8.9° below zero. The greatest daily range was 50° at Carroll, Carroll county. The average of the greatest daily ranges was 34.2°.

Precipitation.—The average precipitation for the State, as shown by the records of 120 stations, was .57 inch, which is .62 inch below the normal. By sections the averages were as follows: Northern section, .93 inch, which is .10 inch below the normal; Central section, .46 of an inch, which is .74 inch below the normal; Southern section, .33 inch, which is 1.00 inch below the normal. The greatest amount, 2.07 inches, occurred at Ridgeway, Winneshiek county, and the least, .05 inch, at Greenfield, Adair county, and Whitten, Hardin county. The greatest amount in twenty-four hours, 1.18 inch, occurred at Osage, Mitchell county, on the 16th.

The average snow fall, unmelted, was 3.8 inches. By sections, the averages were as follows: Northern section, 4.3 inches; Central section, 4.0 inches; Southern section, 3.1 inches. The greatest monthly snowfall, 8.4 inches, occurred at Inwood, Lyons county, and the greatest amount in twenty-four hours, 7.0 inches, at Belle Plaine, Benton county, on the 6th. Measurable precipitation occurred on an average of 3 days.

Sunshine and Cloudiness.—The average number of clear days was 15; partly cloudy, 8; cloudy, 8. The duration of sunshine was generally above the normal, the percentage of the possible amount being 62 at Charles City, 49 at Davenport, 60 at Des Moines, 44 at Dubuque, 53 at Keokuk, 54 at Sioux City, and 61 at Omaha, Neb.

Wind.—Northwest winds prevailed. The highest velocity reported was 50 miles per hour from the northwest at Sioux City, Woodbury county, on the 30th.

AVERAGE DATES OF LAST KILLING FROST IN SPRING AND FIRST IN AUTUMN, IN IOWA.

Station	Length of Record, Years	FROST			
		Average Date of		Date of	
		First Killing in Autumn	Last in Spring	Earliest Killing in Autumn	Latest in Spring
Charles City	17	Sept. 26	May 16	Sept. 12	May 29
Davenport	35	Oct. 13	April 22	Sept. 18	May 22
Des Moines	31	Oct. 10	April 22	Sept. 13	May 22
Dubuque	35	Oct. 13	April 21	Sept. 27	May 21
Keokuk	37	Oct. 15	April 11	Sept. 18	May 4
Omaha, Nebraska	38	Oct. 12	April 16	Sept 18	May 19
Sioux City	19	Sept. 27	May 4	Sept. 13	May 21

DATES OF LAST KILLING FROST IN SPRING AND FIRST IN AUTUMN IN IOWA FOR 1908

Stations	Killing Frost	
	Last in Spring	Last in Autumn
Afton	May 2	Sept. 28
Albia	May 2	Sept. 28
Algona	May 3	Sept. 28
Allerton	May 2	Sept. 28
Alta	May 3	Sept. 28
Alton	May 3	Sept. 28
Amana	May 3	Sept. 29
Ames	May 4	Sept. 28
Atlantic	May 9	Sept. 28
Audubon	May 9	Sept. 28
Baxter	May 2	Sept. 28
Bedford	May 2	Sept. 28
Belle Plaine	May 2	Sept. 28
Bloomfield	May 2	Sept. 28
Bonaparte	May 2	Sept. 28
Boone	May 2	Sept. 28
Britt	May 3	Sept. 28
Burlington	May 2	Sept. 28
Carroll	May 9	Sept. 28
Cedar Rapids	May 3	Sept. 28
Chariton	May 2	Sept. 28
Charles City	May 3	Sept. 28
Clarinda	May 3	Sept. 28
Clear Lake	May 3	Sept. 28
Clinton	May 3	Sept. 29
Columbus Junction	May 2	Sept. 28
Corning	May 2	Sept. 28
Corydon	May 2	Sept. 28
Creston	May 3	Sept. 28
Davenport	May 2	Sept. 29
Decorah	May 9	Sept. 29
Delaware	May 3	Sept. 29
Denison	May 9	Sept. 28
Des Moines	May 2	Sept. 28
De Soto	May 2	Sept. 28
Elkader	May 9	Sept. 29
Dubuque	May 3	Sept. 29
Earlham	May 9	Sept. 28
Elliott	May 2	Sept. 27
Elma	May 9	Sept. 28
Estherville	May 3	Sept. 28
Fayette	May 9	----------
Fairfield	May 8	Sept. 28
Forest City	May 3	Sept. 28
Fort Dodge	May 7	Sept. 28
Grand Meadow	May 3	Sept. 29
Greene	May 3	Sept. 28
Grinnell	May 2	Sept. 28
Grundy Center	May 3	Sept. 28
Guthrie Center	May 2	Sept. 28
Hampton	May 3	Sept. 28
Hancock	May 2	Sept. 28
Harlan	May 9	Sept. 28
Hopeville	May 2	Sept. 28
Humboldt	May 3	Sept. 28
Independence	May 3	Sept. 28
Indianola	May 2	Sept. 28
Inwood	May 9	Sept. 28
Iowa City	May 3	Sept. 29
Iowa Falls	May 9	Sept. 28
Keokuk	May 2	Sept. 29
Keosauqua	May 2	Sept. 29
Knoxville	May 2	Sept. 28
Larrabee	May 8	Sept. 28
Le Mars	May 9	Sept. 28
Lenox	May 2	Sept. 28
Leon	May 2	Sept. 28
Little Sioux	May 9	Sept. 28
Logan	May 8	Sept. 28
Marshalltown	May 3	Sept. 28
Mason City	May 3	Sept. 28
Mount Ayr	May 2	Sept. 28
Mount Pleasant	May 2	Sept. 29
New Hampton	May 3	Sept. 28
Newton	May 2	Sept. 28
Northwood	May 3	Sept. 28
Odebolt	May 7	Sept. 28
Olin	May 3	Sept. 29
Onawa	May 2	Sept. 29
Osage	May 3	Sept. 28
Oskaloosa	May 2	Sept. 28
Ottumwa	May 3	Sept. 28
Pacific Junction	May 8	Sept. 28
Pella	May 2	Sept. 28
Perry	May 2	Sept. 28
Plover	May 8	Sept. 28
Pocahontas	May 3	Sept. 28
Ridgeway	May 3	Sept. 29
Rock Rapids	May 9	----------
Saint Charles	May 2	Sept. 28
Sheldon	May 8	Sept. 28
Sibley	May 8	Sept. 28
Sigourney	May 2	Sept. 28
Sioux Center	May 7	Sept. 28
Sioux City	May 2	Sept. 29
Stockport	May 2	Sept. 29
Storm Lake	May 3	Sept. 28
Thurman	May 2	Sept. 28
Tipton	May 3	Sept. 29
Toledo	May 3	Sept. 29
Wapello	May 2	----------
Washington	May 2	Sept. 28
Washta	May 9	Sept. 28
Waterloo	May 2	Sept. 29
Waukee	May 2	Sept. 28
Waverly	May 3	Sept. 29
Webster City	May 9	Sept. 28
West Bend	May 3	Sept. 28
Whitten	May 3	Sept. 28
Wilton Junction	May 4	Sept. 29
Winterset	May 2	Sept. 28
Woodburn	May 9	Sept. 28
Zearing	May 3	----------

CONDENSED SUMMARY FOR 1908

Month	Temperature in Degrees Fahr.												
	State Average	Departure	Highest Mean	Station	Lowest Mean	Station	Highest	Station	Date	Lowest	Station	Date
January	24.9	†5.7	30.4	Keokuk	18.5	Osage	60	Logan	6	-18	Estherville	29
February	24.3	†5.1	29.1	Keokuk	18.2	Rock Rapids	59	Keokuk	12	-16	Forest City	29
March	37.9	†3.9	44.8	Keokuk	31.4	Sibley	85	Woodburn	25	-8	Decorah	2
April	50.5	†2.0	55.8	Corning	46.6	Sibley	91	Onawa	19	8	Inwood	8
May	59.4	-0.7	63.2	Keokuk	55.2	Rock Rapids	93	Ft. Dodge	*16	13	Ft. Dodge	2
								Clinton	22	---	Washta	2
June	67.1	-1.7	71.9	Burlington	62.9	Sibley	94	Decorah	23	35	Elma	15
								Rockwell City	11	---		
July	73.0	-0.4	78.3	Fairfield	69.2	Sibley	100	Odeboldt	29	42	Inwood	7
								Oskaloosa	3	---		
August	70.0	-1.8	74.5	Keokuk	66.2	Sibley	101	Ottumwa	3	38	Atlantic	24
September	67.9	†4.2	71.6	Onawa	64.6	Mason City	98	Ridgeway	11	20	Washta	29
				Burlington	----							
October	51.1	-0.8	54.4	Keokuk	46.6	Sibley	89	Clarinda	14	17	Atlantic	12
November	39.3	†3.4	45.2	Keokuk	35.4	Britt	80	St. Charles	18	5	Sioux Center	30
December	27.2	†3.6	33.4	Keokuk	19.5	Northwood	67	Washington	14	-17	Alton	7

Month	Precipation in Inches						Av. No. Days				Prevailing Wind
	State Average	Departure	Greatest Total	Station	Least Total	Station	With .01 or more Precip.	Clear	Pt. Clo'dy	Cloudy	
January	.44	- .56	1.50	Ft. Madison	.09	Buckingham	2	17	8	6	NW
February	1.69	† .63	3.95	Olin	.23	Clear Lake	6	12	6	11	NW
March	1.58	- .36	3.74	LeClair	.45	Ames	6	13	7	11	NW
April	2.24	- .59	4.59	Inwood	.67	Little Sioux	8	14	8	8	NW
May	8.34	†3.84	14.33	Ft. Madison	4.33	Belle Plaine	15	9	11	11	SE
June	5.66	†1.14	11.88	Plover	1.77	Sigourney	13	12	10	8	SE
July	3.66	- .78	9.21	Alta (near)	.70	Oskaloosa	8	16	10	5	SW
August	4.77	† .78	10.58	Pella	1.35	Rock Rapids	9	17	9	5	SW
September	1.20	-2.21	3.46	Grand Meadow	.25	Jefferson	3	21	6	3	S
October	3.38	†1.03	8.83	Lamoni	.58	Clinton	8	16	6	9	S
November	1.56	† .17	3.31	Clinton	.21	Pacific Junction	5	14	7	9	NW
December	.57	- .62	2.07	Ridgeway	.05	Greenfield	3	15	8	8	NW
						Whitten					

*And other dates.

CLIMATE AND CROP REVIEW.

CROP SEASON OF 1908.

During the first and second decades of January the temperature was decidedly above the normal and was not down to zero, except in the northern districts, until the 23d. After that date the temperature was more seasonable and records of zero or below were reported on one or more dates from all sections of the state; the lowest for the month and winter occurring on the 29th. The average precipitation was below the normal, and the amounts were uniformly small; the only storm of consequence was on the 31st, and was attended by rain, snow and sleet, the latter causing a great deal of damage to fruit-trees, telegraph, telephone, and electric car lines, but, on the whole, the month was exceptionally pleasant with an abundance of sunshine.

February opened cold with the temperature below zero on the 1st and 2d, and these were the coldest days of the month. After the 2d, the weather was quite moderate, except on the 18th, 20th and 27th, when the temperature was nearly to or below zero; but the average temperature for the month was considerably above the normal, the greatest excess being in the northern counties where it averaged 5.9° above the normal. The precipitation was heavier than ever before recorded in February since the organization of the State Weather Service in 1890. The snowfall was unusually heavy, and the excess in precipitation for the month was due mostly to the severe snowstorm which swept over the state on the 18th. It was the most severe storm of the winter; the amounts of snow ranged from 2 to 4 inches, in the northern counties, to 10 to 16 inches, in southern and eastern counties. The storm was attended by high winds which drifted the snow badly and delayed traffic in all sections of the state, and, on some of the railroads in the southern section, no trains were run for two days. The snow melted rapidly on the 22d and 23d, and at the close of the month the ground was uncovered except a trace in the northeastern counties.

The weather during March was excetionally mild and pleasant with the temperature uniformly above the normal, and the precipitation below the normal, except over the east central counties. The coldest day of the month was on the 8th, when the minimum temperatures in a few of the northwestern counties were from one to eight degrees below zero. The precipitation was quite well distributed and fell mostly in the form of rain, no snow being reported except small amounts in the central and northern counties. The month afforded more than the usual number of pleasant days for farm and other out-door work. The growth of vegetation was not as far advanced at the end of the month as it was at the close of March, 1907, but fully as much seeding of small grain and plowing for corn had been done.

April opened and closed with cool waves during which the temperatures were below freezing. During the first three days the minimum temperatures ranged from 11° to 18° over the northern district, and from 14° to 24° in the southern district. From the 3d to the 27th the weather was moderate and generally very pleasant with maximum temperatures, at some stations, above 90° on the 13th and 19th. There was an excess of sunshine, and, except in a few localities, where heavy local showers occurred, there was less than the usual amount of rainfall, the greatest deficiency occurring over the southwestern and southern counties. The conditions were exceptionally favorable for work in the fields, and the seeding of small grain was practically completed at the beginning of the third decade, and at the close of the month more than the usûal amount of ground had been prepared for corn. Up to the 27th, the prospects for a fruit crop were never better, but the frosts and freezing temperatures during the last three days of the month did considerable damage to the buds, especially in southern counties.

The cool wave, which swept over the state during the last three days of April, continued until the 3d of May, causing heavy to killing frost in all parts of the state on the 2d, which resulted in further injury to fruit and garden truck. From the 3d to the close of the month there were no decided changes in temperature, it being quite moderate and uniform, so that the monthly average was but a fraction of a degree below the normal. The month was, however, characterized by abnormally heavy rainfall and the frequency of showers. Rain fell in some part of the state on every day of the month. The average amount of precipitation was 8.34 inches, or 3.84 inches above the normal. This record has been exceeded in May but twice during the past 19 years, viz.: 1892 and 1903, with an average amount of 8.77 and 8.55 inches respectively. The excessive rainfall caused flood stages in all streams and rivers, washed hillsides, overflowed low and bottom lands, prevented the completion of corn planting and the cultivation of the early planted fields. There was about 20% of the corn area to be planted at the close of the month and a great deal of replanting to be done.

During June the average temperature was below the normal and the rainfall exceeded the normal by 1.14 inch. In the western portion of the upper Des Moines river valley, the excess ranged from 4 to over 7 inches; the greatest monthly rainfall reported was 11.88 inches at Plover in Pocahontas county. Severe thunderstorms, accompanied by wind squalls and hail, were frequent; the most damaging wind storm occurred at Charles City, in Floyd county, on the afternoon of the 7th, and one of the worst hailstorms on record in this state swept over Howard, Winneshiek, Allamakee and Clayton counties on the evening of the 20th, causing damage to the extent of over $400,000. The frequent and heavy rains prevented work in the fields, kept the rivers up to flood stages, flooded all low and flat lands and caused considerable washing of the soil on hillsides, and as a result, farmers in some sections of the state were planting or replanting corn up to the close of the month. But in spite of the adverse conditions the early planted corn on high and well tilled land showed a good stand and was exceptionally clean, and some fields were laid by before the end of the month. The excessive moisture and moderately cool weather were very beneficial to grass, and the hay crop of 1908 will go on record as having been one of the largest yields per acre ever harvested in this state. The cherry crop was light in southern and fair in the northern counties, where the buds were not so far advanced at the time of the frosts in May.

July was an exceptionally good harvest month, the temperature being very nearly normal and but little rainfall after the 7th. The number of wind squalls and hailstorms were less than is usual in July; the worst windstorm occurred on the afternoon of the 26th in Ida county and caused considerable damage to crops and buildings; and the worst hailstorm of the month occurred on the 17th near Woodburn, Clarke county. Small grain harvest began during the second week and was nearly completed and threshing operations were in full progress before the close of the month. Corn made rapid growth but was very uneven in size, owing to the long interval of time between the early and late planted fields.

The mean temperature of August was 1.8° below and the average precipitation was .78 inch above the normal. The highest temperature of the summer was recorded during the month, the maximum being 101.° The rainfall was fairly well distributed both as to amount and number of showers. The weather was favorable for the growth of vegetation and for farm work. Harvest was finished and threshing was well advanced at the close of the month. Corn made rapid advancement but showed no indication of ripening.

September will go on record as having had the longest drouthy period of any September during the past 19 years, and for its long period of high temperature which averaged 4.2° above the normal. With the exception of a few scattered showers on the 4th and 5th, 13th and 23d, there was no rain in the state from the night of August 31st to the night of September 25th. The warm, dry weather prevented fall plowing and was injurious to pastures and the surface water supply, but was very beneficial to corn, preparing it for the killing frost and freezing temperatures which came on the 28th and 29th. Fall plowing, which had been delayed by the dry weather, was resumed after the copious showers on the 26th, 27th and 28th.

Drouthy conditions prevailed from the 1st to the 19th of October, with an excess of temperature during the same period, but during the last decade of the month the conditions were reversed, the average temperature for the month being below and the precipitation above the normal. The clear, dry and warm weather with brisk winds during the first half of the month caused the corn crop to dry out rapidly and husking began between the 15th and 18th, but was delayed by the rains between the 19th and 28th so that only about 15% of the crop was cribbed at the close of the month.

November was an exceptionally mild and pleasant month with an average temperature 3.4° above the normal, and a slight excess of precipitation. There were no severe rain or sleet storms and but one light snowstorm. The clear and warm weather was favorable for out-door work and nearly 90% of the corn crop had been harvested by the close of the month. Considerable fall plowing was done and meadows, pastures and fall grains were reported as being in good condition. The clear and mild weather continued during December, there being an excess of 3.6° in temperature and a deficiency of .62 inch in precipitation with an abundance of sunshine. There was but one period during the month when the temperatures were generally below zero. On the 6th and 7th, the temperature ranged from zero to 17° below zero.

COMPARATIVE DATA FOR THE STATE—ANNUAL

	Temperature					Precipitation			
	Mean Annual	Highest	Date	Lowest	Date	Annual	Greatest Annual	Least Annual	Average Snow Fall
1890	48.0	110	July 13	—27	January 22	31.28	45.74	16.00	-----
1891	47.3	106	August 9	—31	February 4	32.90	49.05	23.48	-----
1892	46.6	104	July 11	—38	January 19	36.58	48.77	24.78	31.7
1893	45.7	102	July *13	—36	January 14	27.59	33.27	19.19	36.2
1894	49.7	109	July 26	—37	January 25	21.94	29.81	15.65	18.4
1895	47.2	104	May 28	—33	February 1	26.77	35.25	18.57	25.5
1896	48.6	104	July 3	—20	January 4	37.23	51.60	28.68	19.8
1897	47.9	106	July *23	—30	January 25	26.97	36.18	20.21	38.5
1898	47.7	103	August 20	—25	December 31	31.34	55.47	19.51	38.6
1899	47.5	104	September 6	—40	February 11	28.68	42.06	21.79	23.2
1900	49.3	103	August 3	—27	February 15	34.15	47.33	25.05	26.3
1901	48.9	113	July 22	—31	December 15	24.41	37.69	16.35	37.2
1902	47.7	98	July 30	—31	January 27	43.82	58.80	20.14	27.7
1903	47.7	101	August 24	—27	December 13	35.39	50.53	26.41	19.1
1904	46.3	100	July 17	—32	January 27	28.51	38.93	19.34	30.3
1905	47.2	104	August 11	—41	February 2	36.56	52.26	24.66	37.9
1906	48.4	102	July 21	—32	February 10	31.60	44.34	20.63	32.5
1907	48.0	102	July 5	—31	February 5	31.61	43.90	19.93	24.3
1908	49.5	101	August 3	—18	January 29	35.26	49.98	24.11	20.7

*And other dates.

IOWA CROP REPORT—JUNE 1, 1908.

ACREAGE OF FARM CROPS. ESTIMATED CONDITION OF STAPLE CROPS. FRUIT AND LIVE STOCK.

Reports received June 1st from county and township correspondents of the Iowa Weather and Crop Service show the following results as to the number of acres and average condition of staple farm crops; also the condition of fruit and live stock.

CORN.—The estimated number of acres of corn planted appears to be 8,970,900, or an increase of 112,820 acres as compared with the area harvested in 1907. It is probable that some of the acreage intended to be planted will have to be abandoned necessitating a revision of the above estimate, and the revised report will be given in July, together with the acreage by counties. The average condition of the corn already planted on June 1st was placed at 92 per cent for the state, as against 88 per cent on June 1, 1907.

WHEAT.—The area of spring wheat is estimated to be 323,467 acres, and winter wheat, 85,147 acres, making a total wheat acreage of 408,614 acres. This is 12,511 acres less than was harvested in 1907. The estimated condition of winter wheat was 101, and spring wheat 100 as compared with 91 and 88 per cent respectively on the same date last year.

OATS.—The acreage of oats is placed at 97 per cent, and the average condition 102 per cent. Last year the condition on June 1st was 89 per cent.

BARLEY.—Acreage sown, 397,408 acres, or 198 acres more than last year. The average condition is 101 as compared with 81 per cent on June 1, 1907.

RYE.—Acreage 97; estimated condition, 101 per cent, as compared with 91 per cent last year.

FLAX.—Area seeded, 95 per cent; condition, 96 per cent.

POTATOES.—Acreage planted, 101; condition, 98 per cent. Last year the condition was 86 per cent.

MEADOWS.—Acreage, 96 per cent; condition 104 per cent, as compared with 74 per cent last year. The average condition of meadows on June 1st during the past five years is 93 per cent.

PASTURES.—The acreage is about 99 per cent, and the condition is 106. Last year the condition was 80 per cent.

CONDITION OF FRUIT.—Apples, 67 per cent; plums, 57; peaches, 51; cherries, 71; grapes, 81; strawberries, 87; raspberries, 81; blackberries, 86.

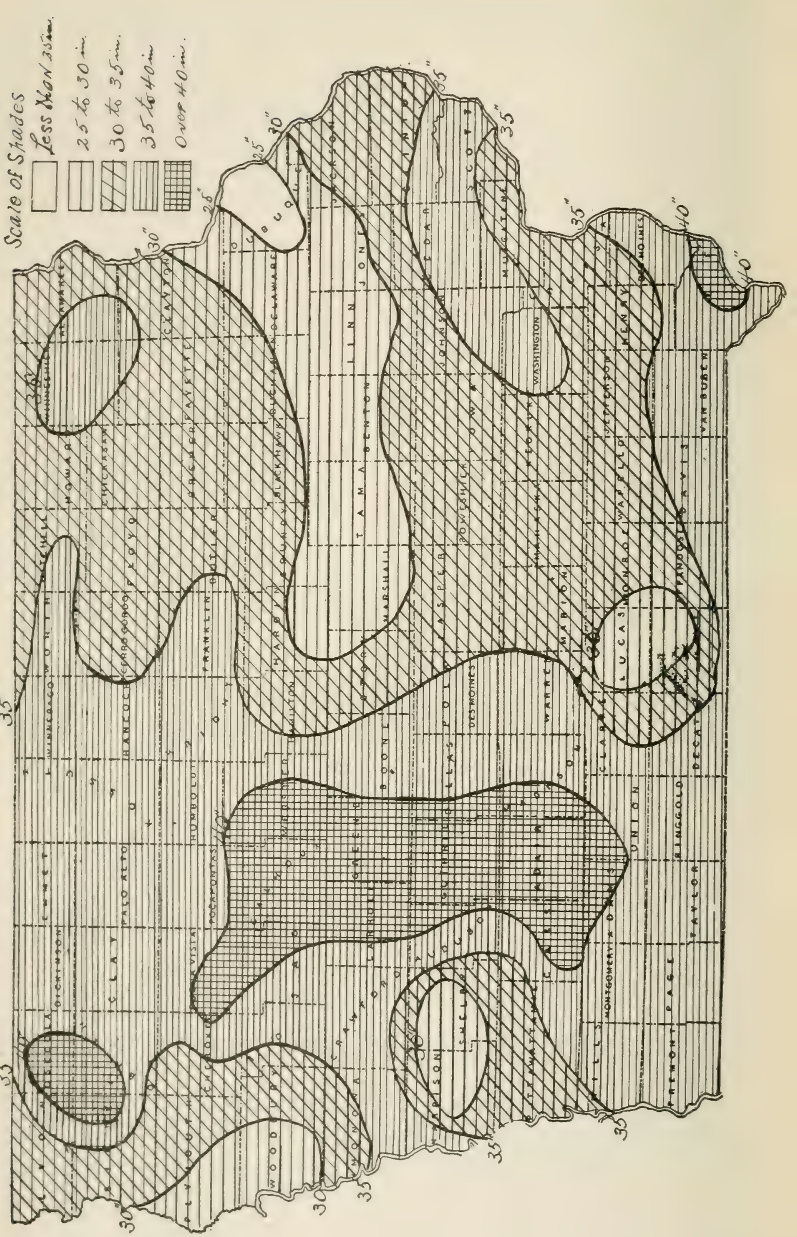
CONDITION OF LIVE STOCK.—Cattle, 99 per cent; hogs, 94; horses, 98; sheep, 99; foals, 94; spring pigs, 90.

IOWA CROP REPORT, JULY 1, 1908.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of the staple crops, July 1, 1908, as compared with the average condition on that date in past years: Corn, 85 per cent; winter wheat, 99; spring wheat, 94; oats, 90; rye, 95; barley, 93; flax, 89; hay crop, 103; pastures, 104; potatoes, 99; apples, 50; plums, 40; grapes, 80. Condition last year: Corn, 76; spring wheat, 90; oats, 89; barley, 90; rye, 94; flax, 91; hay crop, 78; pastures, 92; potatoes, 98; apples, 42; grapes, 80.

A revise destimate of the area of corn planted this year shows about 95 per cent, or an average decrease of a little over 5 per cent, compared with the area planted in 1907.

ANNUAL PRECIPITATION CHART, 1908.


Scale of Shades
Less than 25 in.
25 to 30 in.
30 to 35 in.
35 to 40 in.
Over 40 in.

IOWA CROP REPORT, JULY 25, 1908.

Following is a summary of reports received from crop correspondents of the Iowa Weather and Crop Service, showing the estimated condition of the staple crops July 25, 1908, as compared with the average condition on that date in past years: Corn, 88 per cent; spring wheat, 93; oats, 85; flax, 92; barley, 94; hay crop, 104; pastures, 102; potatoes, 93; apples, 48; grapes, 78.

Conditions August 1, 1907: Corn, 79 per cent; spring wheat, 85; oats, 76; barley, 85; flax, 88; hay, 80; potatoes, 90; pastures, 100; apples, 40; grapes, 84.

FINAL CROP REPORT, 1908.

FINAL REPORT FOR THE STATE—TOTAL YIELD OF SOIL PRODUCTS—VALUE AT FARM PRICES, DECEMBER 1, 1908.

Following is a summary of crop reports from correspondents of the Iowa Weather and Crop Service showing the average yield per acre and total yields of staple soil products, and the average prices at the farms or nearest stations, December 1, 1908. The value gained by feeding farm crops for the production of live stock, poultry, and dairy products is not taken into consideration in this report.

CORN.—A revised report of the estimated corn acreage, made July 1, after the heavy rains had ceased, indicated that the area planted this year was 8,399,610 acres, or 458,390 acres less than the area planted in 1907. The average yield per acre for the state this year was 35.9 bushels, making a total yield of 301,873,150 bushels. This exceeds the average yield of the ten preceding years by over ten million bushels. The average farm price on December 1st was 51 cents per bushel, making the aggregate value $153,955,306, and the most valuable corn crop ever raised in the State. Owing to the high temperature and dry weather in September, the late planted fields were rushed toward maturity too rapidly and as a result about 9% of the crop is reported as being soft; otherwise the condition of the crop is excellent.

WHEAT.—Winter wheat area harvested, 85,147 acres; yield per acre, 19.7 bushels; total yield, 1,678,540 bushels; average price, 86 cents per bushel; total value, $1,443,544. Spring wheat area harvested, 323,467 acres; average yield, 15.4 bushels per acre; total product, 4,968,250 bushels; price per bushel, 86 cents; total value, $4,272,695; aggregate value of wheat, $5,716.239.

OATS.—The oats crop this season has been below the average in yield per acre and weight per bushel, as a result of rust and other adverse conditions. The area harvested was 4,431,650 acres; average yield, 25.5 bushels per acre; total product, 112,830,490 bushels; aggregate value at

43 cents per bushel, $48,517,110. Last season the product was 111,190,400 bushels, valued at $43,364,256. The average total yield for the ten preceding years is 124,433,092 bushels.

Barley.—Area harvested, 397,408 acres; yield per acre, 26.7 bushels; total product, 10,629,660 bushels; average price, 50 cents per bushel; total value, $5,314,830. The average total yield for the preceding ten years is 13,629,872 bushels.

Rye.—Area harvested, 50,893 acres; average yield, 17.1 bushels; total product, 869,072 bushels; average price, 63 cents per bushel; total value $547,515.

Flax.—Area harvested, 40,833 acres; yield per acre, 11.3 bushels; total yield, 461,580 bushels; average price, $1.01 per bushel; total value, $466,195.

Potatoes.—Area harvested, 118,517 acres; average yield, 89.9 bushels; total product, 10,658,290 bushels; average price, 59 cents; total value, $6,288,391. The total yield is about the same as the average yield for the preceding ten years.

Hay (tame).—Average yield per acre, 1.8 tons; total product, 5,838,640 tons; average farm price, $6,16 per ton; value of crop, $35,966,022.

Hay (wild).—Yield per acre, 1.6 tons; total product, 1,445,980 tons; average price, $5.09 per ton; total value, $7,360,038.

The hay crop as a whole (tame and wild) is over 2,000,000 tons in excess of the ten-year average.

TABULATED CROP SUMMARY.

Corn	301,873,150 bu.	$ 153,955,306
Winter Wheat	1,678,540 bu.	1,443,544
Spring Wheat	4,968,250 bu.	4,272,695
Oats	112,830,490 bu.	48,517,110
Rye	869,072 bu.	547,515
Barley	10,629,660 bu.	5,314,830
Flax	461,580 bu.	466,195
Potatoes	10,658,290 bu.	6,288,391
Hay (Tame)	5,898,640 tons	35,966,022
Hay (Wild)	1,445,980 tons	7,360,038
Pastures and Grazing	Estimated	100,000,000
Buckwheat	Estimated	110,000
Sweet Potatoes	Estimated	135,000
Sorghum and Broom Corn	Estimated	175,000
Timothy and Clover Seed	Estimated	1,700,000
Alfalfa and Millet	Estimated	525,000
Sweet Corn	Estimated	800,000
Fruit Crops	Estimated	2,500,000
Garden Truck	Estimated	6,000,000
Total		$ 376,076,646

FINAL CROP REPORT—1908.

ACREAGE, YIELD PER ACRE AND TOTAL YIELD OF CORN, OATS, BARLEY AND WINTER AND SPRING WHEAT —BY COUNTIES.

Counties	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels
Adair	86,190	39	3,361,400	32,940	28	922,320	2,560	29	74,240	55	22	1,210	2,560	14	35,840
Adams	69,200	30	2,076,000	21,390	20	427,800	1,720	25	43,000	770	23	17,710	1,320	16	21,120
Allamakee	38,070	32	1,218,200	21,030	27	567,800	11,810	28	330,600	1,025	15	15,370	570	13	7,410
Appanoose	52,300	30	1,569,000	20,040	19	380,760	110	23	2,530	1,004	18	18,070	20	17	340
Audubon	85,940	35	3,007,900	36,220	21	760,620	6,120	28	171,360	40	22	880	7,450	15	111,750
Benton	132,320	42	5,557,000	70,880	30	2,126,400	12,070	31	374,170	40	26	1,040	460	18	8,280
Black Hawk	93,040	40	3,721,600	53,170	31	1,648,200	4,020	32	128,640	30	20	600	145	14	2,000
Boone	94,400	39	3,681,600	25,610	30	768,300	700	32	22,400	45	21	940	1,500	15	22,500
Bremer	61,400	37	2,271,800	50,720	30	1,521,600	3,490	31	108,190	25	24	600	150	23	3,450
Buchanan	80,740	34	2,745,000	50,090	28	1,402,500	2,930	25	73,250	13	19	250	106	18	1,900
Buena Vista	95,360	34	3,242,200	73,770	22	1,622,900	1,030	23	23,690	27	20	540	1,260	15	18,900
Butler	106,380	36	3,829,680	72,350	30	2,170,500	2,050	28	57,400	30	15	450	190	16	3,040
Calhoun	95,850	36	3,450,600	70,210	29	2,036,000	1,950	30	58,500	35	16	560	775	15	11,620
Carroll	106,000	38	4,028,000	60,460	25	1,511,500	3,940	25	98,500	71	18	1,270	7,410	14	103,700
Cass	101,320	36	3,647,500	39,590	19	752,200	3,390	29	98,300	1,400	22	30,800	8,350	16	300,600
Cedar	103,470	40	4,138,800	31,540	28	881,100	12,990	30	389,700	368	25	9,200	970	18	17,460
Cerro Gordo	88,070	32	2,818,000	74,660	24	1,791,800	1,930	20	38,600	----------	----	----------	410	13	5,300
Cherokee	108,750	41	4,458,700	70,160	26	1,824,160	3,500	27	94,500	80	24	1,920	3,540	15	53,100
Chickasaw	42,020	35	1,470,700	61,990	27	1,673,730	4,650	32	148,800	40	20	800	560	18	10,000
Clarke	51,080	34	1,736,700	16,070	23	370,600	430	25	10,750	540	18	9,720	40	14	560
Clay	70,650	32	2,260,800	65,840	25	1,646,000	1,590	23	36,570	100	20	2,000	1,120	15	16,800
Clayton	73,560	40	2,942,400	58,320	28	1,632,960	8,130	27	219,500	465	20	9,300	1,350	15	20,250
Clinton	112,090	39	4,374,510	39,150	27	1,057,000	3,690	32	118,000	138	18	2,480	19,310	14	270,300
Crawford	135,070	39	5,267,700	58,320	25	1,458,000	14,000	26	364,000	940	18	16,920	1,130	16	18,000

Dallas	111,240	42	4,672,080	43,030	30	1,290,900	1,370	30	41,100	580	22	12,760	1,230	15	18,450
Davis	43,640	27	1,178,280	19,660	20	393,200	60	25	1,500	995	16	15,920	----------	----	----------
Decatur	55,100	32	1,763,200	15,890	21	333,690	40	23	920	1,368	19	25,990	----------	----	----------
Delaware	92,600	34	3,148,400	39,320	30	1,179,600	13,120	30	393,600	40	23	920	167	20	3,340
Des Moines	59,030	35	2,076,000	24,130	19	458,470	690	17	17,730	3,128	19	59,390	20	14	280
Dickinson	38,360	25	959,000	40,810	21	857,000	3,010	21	63,200	----------	----	----------	1,020	12	12,200
Dubuque	63,530	40	2,541,200	45,260	28	1,267,280	6,220	28	174,160	96	20	1,920	1,010	19	19,190
Emmet	45,340	27	1,224,180	43,210	23	993,830	580	26	15,080	35	18	630	710	16	11,360
Fayette	86,110	33	2,844,630	65,510	30	1,965,300	1,820	22	40,040	173	18	3,110	780	13	10,140
Floyd	75,790	33	2,501,070	73,560	28	2,059,680	2,430	24	58,320	16	17	270	171	14	2,390
Franklin	99,300	37	3,674,100	75,570	31	2,342,670	1,450	27	39,150	----------	----	----------	1,450	14	20,300
Fremont	104,000	28	2,912,000	14,430	18	259,740	130	18	2,340	2,660	20	53,200	3,170	16	50,720
Greene	103,620	41	4,248,400	48,570	27	1,311,390	1,550	25	38,750	30	19	570	350	12	4,200
Grundy	99,800	42	4,191,600	65,630	35	2,297,000	5,630	30	168,900	50	18	900	863	17	14,670
Guthrie	83,930	43	3,608,900	33,080	27	893,160	1,600	24	38,400	218	24	5,230	2,630	16	42,080
Hamilton	95,380	38	3,624,400	64,070	30	1,922,100	540	26	14,000	267	22	5,870	1,920	17	32,640
Hancock	71,570	32	2,290,200	80,700	25	2,017,500	1,520	26	39,520	30	20	600	1,810	17	30,700
Hardin	100,100	39	3,903,900	62,470	33	2,061,500	1,320	33	43,560	100	17	1,700	2,370	17	40,200
Harrison	125,810	30	3,774,300	22,060	25	551,500	2,120	26	55,100	2,890	25	72,200	23,210	15	348,100
Henry	70,060	38	2,662,200	28,410	23	653,400	510	22	11,200	1,240	19	23,560	----------	----	----------
Howard	44,220	27	1,193,900	52,180	23	1,200,140	7,930	27	214,100	50	18	900	740	16	11,840
Humboldt	66,100	32	2,115,200	55,130	27	1,488,500	910	31	28,200	----------	----	----------	3,200	15	48,000
Ida	83,550	38	3,174,900	38,750	26	1,007,500	7,860	26	204,360	250	18	4,500	6,390	15	95,800
Iowa	96,390	39	3,759,210	40,430	28	1,132,000	2,490	26	64,740	375	20	7,500	1,120	14	15,680
Jackson	71,500	36	2,574,000	30,150	26	783,900	6,490	25	153,200	330	20	6,600	1,220	16	19,500
Jasper	121,250	41	4,971,200	51,690	25	1,292,250	1,520	29	44,080	390	22	8,580	3,620	17	61,540
Jefferson	50,440	38	1,916,720	21,740	23	500,000	620	28	17,360	1,970	20	39,400	110	17	1,870
Johnson	102,490	40	4,099,600	47,350	29	1,373,100	4,610	31	142,910	257	27	6,900	870	20	17,400
Jones	75,140	36	2,705,000	28,560	30	856,800	7,440	31	230,600	40	23	920	350	20	7,000
Keokuk	89,660	39	3,496,700	35,270	24	846,400	3,220	23	74,000	830	21	17,400	628	16	10,000
Kossuth	117,800	31	3,651,800	111,960	27	3,022,920	2,450	24	58,800	40	20	800	4,080	19	77,500
Lee	55,180	32	1,765,760	21,460	14	300,400	65	20	1,300	8,720	20	174,400	----------	----	----------
Linn	100,330	39	3,912,800	48,590	24	1,166,100	1.290	28	36,100	70	23	1,600	730	19	13,800
Louisa	62,430	36	2,247,480	22,760	27	614,520	510	30	15,300	3,423	24	82,100	76	20	1,520
Lucas	46,130	32	1,476,160	13,050	29	378,400	410	24	9,800	830	16	4,900	50	17	850
Lyon	88,670	38	3,369,400	75,050	23	1,726,100	3,530	26	91,780	250	19	4,750	8,330	14	116,600
Madison	81,490	41	3,341,090	22,580	25	564,500	3,580	25	89,500	340	25	8,500	950	14	13,300
Mahaska	90,470	34	3,075,900	31,460	24	755,000	3,000	29	87,000	575	21	12,000	840	15	12,600
Marion	94,250	38	3,581,500	27,980	25	699,500	2,060	30	61,800	1,250	23	28,750	2,380	16	38,000
Marshall	102,360	45	4,606,200	52,490	37	1,942,100	1,580	30	47,400	323	34	10,900	2,170	18	39,000

AC REAGE YIELD PER ACRE AND TOTAL YIELD BY COUNTIES—CONTINUED.

Countie	Corn			Oats			Barley			Winter Wheat			Spring Wheat		
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushe s
Mills	87,860	34	2,987,200	15,770	15	236,550	1,120	22	24,640	1,450	22	31,900	4,660	11	51,260
Mitchell	54,970	32	1,759,000	70,910	26	1,843,600	7,020	26	182,520	90	16	1,440	620	14	8,600
Monona	121,000	30	3,630,000	29,480	12	353,760	2,850	27	76,950	10,472	15	157,000	9,450	14	132,300
Monroe	36,200	31	1,122,200	9,060	20	181,200	285	22	6,270	1,416	19	26,900	42	15	630
Montgomery	82,400	30	2,472,000	18,070	18	325,260	1,730	22	38,000	2,449	18	44,000	8,850	13	115,000
Muscatine	64,660	41	2,651,000	20,690	30	620,700	9,300	20	186,000	963	25	24,000	820	16	13,100
O'Brien	70,980	39	2,768,200	61,650	31	1,911,150	13,890	30	416,700	130	19	2,470	3,110	13	40,400
Osceola	47,020	29	1,363,580	70,270	26	1,827,020	8,620	25	215,500	----------	----	----------	2,030	11	22,300
Page	102,550	27	2,768,800	19,030	17	323,500	1,400	26	36,400	6,320	18	113,700	4,430	13	67,500
Palo Alto	52,870	28	1,480,300	56,340	22	1,239,400	655	28	18,340	12	19	220	710	12	8,500
Plymouth	175,710	41	7,204,100	83,240	26	2,164,200	10,090	31	312,790	1,905	24	45,720	41,850	15	627,700
Pocahontas	78,320	30	2,349,600	78,670	23	1,809,410	580	25	14,500	----------	----	----------	465	16	7,400
Polk	91,170	41	3,737,970	40,730	24	977,500	470	28	13,160	795	26	20,600	2,950	18	53,100
Pottawattamie	181,120	31	5,614,720	46,590	18	838,600	2,280	28	63,840	1,060	20	21,200	17,870	14	250,000
Poweshiek	100,900	39	3,935,100	37,030	27	999,810	3,810	30	114,300	12	22	260	1,120	19	21,280
Ringgold	60,720	33	2,003,700	19,230	19	365,370	157	26	4,080	752	19	14,300	38	15	570
Sac	109,650	39	4,276,350	61,830	22	1,360,260	5,390	25	134,700	113	20	2,260	2,010	16	32,160
Scott	79,380	38	3,016,400	24,520	25	613,000	28,600	20	572,000	1,322	26	34,370	2,210	20	44,200
Shelby	116,240	34	3,953,160	43,530	16	696,400	8,070	28	225,960	189	21	3,900	14,020	13	182,200
Sioux	154,290	42	6,480,180	74,950	27	2,023,600	27,890	28	780,920	860	21	18,000	31,160	15	467,400
Story	101,400	45	4,563,000	47,620	31	1,476,200	720	32	23,000	195	18	3,500	590	17	10,000
Tama	117,510	43	5,052,900	52,490	32	1,679,600	11,270	29	326,800	20	20	400	2,400	18	43,200
Taylor	79,580	28	2,228,240	19,210	20	384,200	1,960	23	45,000	2,350	16	37,600	190	15	2,850
Union	47,360	28	1,326,000	15,480	20	309,600	440	18	7,900	300	18	5,400	92	15	1,380
Van Buren	43,490	26	1,130,700	19,210	19	364,900	75	20	1,500	2,100	14	29,400	----------	----	----------

Wapello	48,370	28	1,214,300	17,690	18	318,400	673	19	12,780	1,742	24	41,800	75	20	1,500
Warren	74,670	34	2,538,780	25,030	22	550,600	1,160	23	26,680	938	25	23,450	960	15	14,400
Washington	89,120	40	3,564,800	42,410	25	1,060,000	1,475	25	36,800	990	26	25,740	237	20	4,740
Wayne	69,000	31	2,139,000	21,400	22	470,800	20	22	440	420	19	7,980	----	----	----
Webster	101,560	30	3,046,800	76,920	28	2,153,760	843	22	18,500	6	18	100	3,180	17	54,000
Winnebago	44,980	31	1,394,380	40,200	21	844,200	1,590	27	42,900	----	----	----	4,160	15	62,400
Winneshiek	65,380	33	2,157,540	69,750	22	1,534,500	16,810	21	353,000	457	17	7,760	3,107	14	43,400
Woodbury	173,700	34	5,905,800	54,150	23	1,245,450	6,630	28	185,600	3,819	22	84,000	13,930	13	181,000
Worth	36,580	31	1,133,900	60,010	25	15,000	2,220	27	59,900	20	20	400	1,690	17	28,700
Wright	91,460	35	3,201,100	79,970	25	1,999,200	1,240	30	37,200	----	----	----	3,010	16	48,100
Total acreage	8,399,610			4,431,650											
Total yield			301,873,150			112,830,490	397,408		10,629,660	85,147		1,678,540	323,467		4,968,250
Average per acre		35.9			25.5			26.7			19.7			15.4	

FINAL CROP REPORT—1908.

ACREAGE, YIELD PER ACRE AND TOTAL YIELD OF RYE, FLAX SEED, POTATOES AND TAME AND WILD HAY—BY COUNTIES.

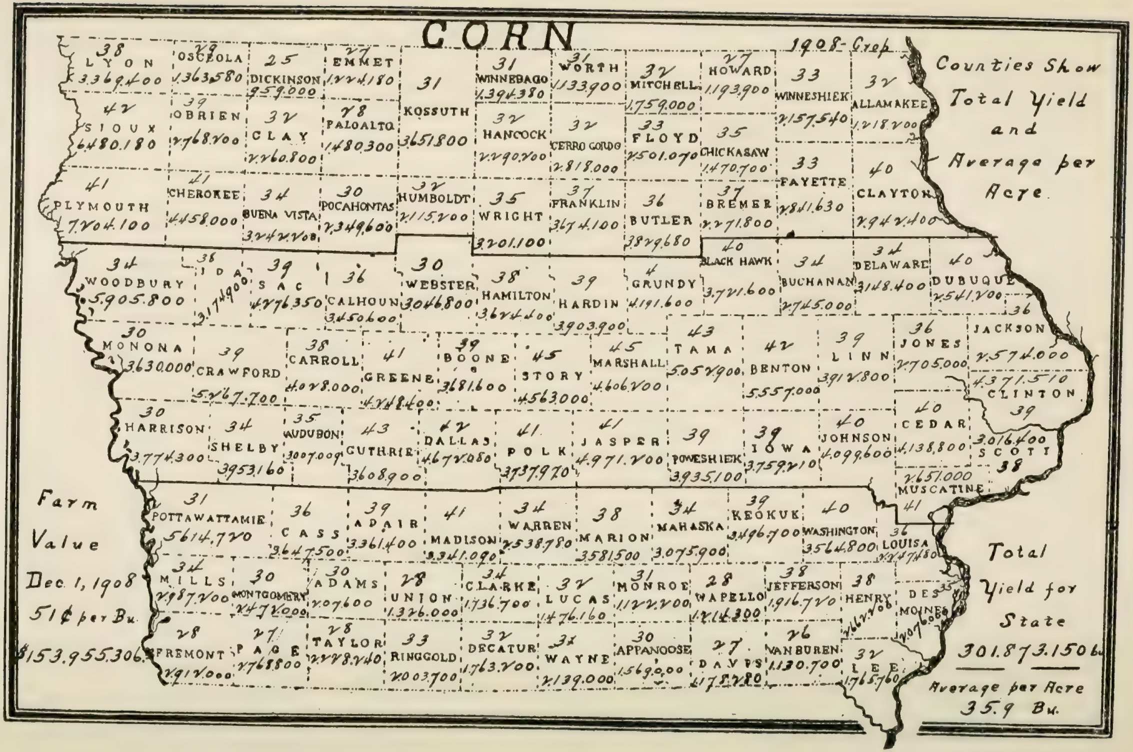
Counties	Rye			Flax Seed			Potatoes			Hay (Tame)			Hay (Wild)			
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Tons per acre	Tons	Acres	Tons per acre	Total Tons	Pastures—Acres
Adair	95	20	1,900	------	----	------	970	76	73,720	46,740	1.6	74,780	4,420	1.5	6,630	110,400
Adams	180	19	3,420	------	----	------	580	75	43,500	32,550	1.8	58,590	2,380	1.6	38,080	87,040
Allamakee	660	16	10,560	270	10	2,700	1,120	75	84,000	43,190	1.8	77,700	940	1.8	1,690	103,900
Appanoose	610	15	9,150	------	----	------	625	46	28,750	76,250	1.5	114,370	2,070	1.0	2,070	141,180
Audubon	11	20	220	------	----	------	780	108	84,240	31,940	1.6	51,100	3,900	1.1	4,290	81,910
Benton	310	20	6,200	------	----	------	1,610	84	135,240	48,580	2.0	97,160	10,020	1.7	17,000	107,680
Black Hawk	1,510	18	27,180	------	----	------	2,970	98	291,000	29,510	1.8	53,100	11,070	1.3	14,390	86,600
Boone	270	18	4,860	------	----	------	1,070	125	133,750	23,870	1.8	42,960	17,800	2.0	35,600	80,010
Bremer	600	19	11,400	100	9	900	2,230	118	263,140	20,260	2.3	46,590	20,650	1.6	33,040	68,800
Buchanan	470	18	8,460	60	8	480	980	92	90,160	39,500	1.9	75,000	13,500	1.4	18,900	100,830
Buena Vista	100	12	1,200	400	10	4,000	1,200	142	170,400	22,690	1.7	38,500	19,100	1.6	30,560	79,280
Butler	1,310	19	24,890	------	----	------	1,510	114	172,140	23,630	1.9	44,890	11,550	1.5	17,325	85,420
Calhoun	200	20	4,000	313	8	2,000	1,060	81	85,860	18,230	1.7	30,990	18,720	2.0	37,400	71,270
Carroll	70	17	1,190	75	8	600	1,750	85	148,750	23,060	1.5	34,690	13,360	1.5	20,000	73,330
Cass	168	21	3,528	------	----	------	1,290	94	121,260	40,490	1.7	68,800	2,830	1.5	4,200	103,270
Cedar	540	19	10,260	------	----	------	1,010	119	120,190	46,250	2.2	101,750	300	2.0	6,000	95,450
Cerro Gordo	790	16	12,600	610	10	6,100	1,460	90	131,400	30,310	2.1	63,650	11,980	1.7	20,300	73,120
Cherokee	20	16	320	60	9	540	1,350	155	209,200	29,080	2.0	58,160	13,260	1.3	17,238	81,250
Chickasaw	450	19	8,550	2,400	12	28,800	1,150	75	86,250	24,850	1.6	39,760	15,830	1.2	18,990	63,630
Clarke	120	15	1,800	------	----	------	500	90	45,000	46,700	1.2	56,040	240	1.1	260	91,500
Clay	120	15	1,800	150	10	1,500	780	142	110,760	28,740	1.8	51,730	18,530	1.5	27,790	71,540
Clayton	1,960	20	39,200	20	10	200	1,715	78	133,770	51,410	2.2	113,100	3,120	1.8	5,600	134,700
Clinton	1,170	16	18,700	------	----	------	1,330	94	125,000	51,690	1.5	77,500	4,080	1.8	7,300	126,530
Crawford	120	20	2,400	------	----	------	1,730	83	143,500	44,010	2.3	101,200	7,580	2.0	15,100	113,670

Dallas	480	19	9,120				690	72	49,680	28,360	1.9	53,880	7,740	1.8	13,932	96,600
Davis	1,180	16	18,880				510	95	48,450	42,700	2.2	93,940	60	1.8	100	204,650
Decatur	628	15	9,420				456	70	31,920	41,580	1.4	58,200	710	1.2	850	98,210
Delaware	1,210	17	20,570	35	10	350	1,330	110	146,300	51,590	1.7	87,690	7,160	1.2	85,900	106,870
Des Moines	1,010	17	17,170				1,170	60	70,200	25,540	1.5	38,310	550	1.4	770	18,510
Dickinson	90	15	1,300	800	12	9,600	580	92	53,360	15,530	1.6	24,840	16,770	1.2	20,120	43,110
Dubuque	340	16	5,440				2,410	89	214,490	48,600	1.7	82,620	2,170	1.6	3,470	115,030
Emmet	110	15	1,650	680	10	6,800	510	95	48,450	19,650	1.6	31,440	12,400	1.2	14,880	45,090
Fayette	300	16	4,800	855	10	8,550	1,610	90	144,900	54,950	1.8	98,910	13,370	1.0	13,370	133,300
Floyd	800	18	14,400	920	11	10,120	1,430	65	92,950	13,200	1.9	25,080	4.830	1.6	7,720	63,190
Franklin	370	16	5,920	340	10	3,400	1,520	100	152,000	28,780	1.4	40,490	15,650	1.2	18,780	82,110
Fremont	320	15	4,800				625	105	65,625	21,210	1.5	31,800	4,170	1.5	6,250	71,040
Greene	260	15	3,900	60	10	600	1,030	96	98,800	25,140	1.7	42,730	15,580	1.1	17,100	82,110
Grundy	45	15	670	20	12	240	3,330	125	416,200	23,180	2.1	48,670	8,870	1.5	13,300	68,040
Guthrie	138	13	1,794				930	75	69,750	33,410	2.0	66,820	5,500	1.8	9,900	85,530
Hamilton	92	25	2,300	300	13	3,900	1,020	101	103,000	24,090	2.0	48,180	19,660	1.5	29,490	80,410
Hancock	120	20	2,400	495	9	4,450	850	110	93,500	21,470	1.8	38,600	16,780	1.3	21,800	66,390
Hardin	150	20	3,000	40	10	400	1,190	95	113,050	24,470	1.8	44,000	14,840	1.4	20,700	88,470
Harrison	910	18	16,300				1,220	50	61,000	21,120	1.5	31,680	13,050	2.0	26,100	91,110
Henry	1,460	17	24,820				580	65	37,700	23,480	1.8	42,260	45	1.5	60	78,470
Howard	335	17	5,690	7,860	11	86,400	770	47	36,190	36,120	2.0	72,240	10,950	1.2	13,140	63,160
Humboldt	110	15	1,650	260	10	2,600	660	100	66,000	21,360	2.0	42,720	15.270	1.6	24,400	56,620
Ida	35	18	630				940	98	92,120	25,750	1.6	41,200	3,540	1.4	4,950	60,050
Iowa	495	17	8,410				1,330	80	106,400	49,820	1.8	89,670	940	1.5	1,410	106,120
Jackson	108	19	2,050				1,205	75	90,370	63,110	1.6	100,900	1,780	1.5	2,670	152,290
Jasper	520	15	7,800				1,220	75	91,500	45,370	1.8	81,600	2,180	1.6	3,480	143,810
Jefferson	1,720	15	25,800				440	60	26,400	33,140	1.6	53,000	37	1.6	60	90,920
Johnson	1,420	19	26,900				1,320	90	118,800	51,080	2.1	107,200	1,860	1.9	3,500	103,220
Jones	730	14	10,200				1,180	90	106,200	49,630	2.0	99,200	850	1.8	1,500	115,300
Keokuk	955	18	17,190				820	91	74,600	45,820	2.2	100,800	250	1.8	450	103,660
Kossuth	410	15	6,150	1,400	8	11,200	1,570	60	94,200	34,860	1.8	62,700	55,430	1.5	83,100	121,200
Lee	3,000	14	42,000				1,325	53	70,200	39,410	1.6	63,000	3,090	1.5	46,300	108,610
Linn	780	16	12,400				1,920	70	134,400	16,480	1.5	24,720	5,770	1.5	8,650	115,120
Louisa	1,880	18	33,800				570	77	43,890	17,860	1.9	33,900	480	2.0	960	59,450
Lucas	475	15	7,100				410	71	29,100	41,430	1.4	58,000	780	1.5	11,700	87,120
Lyon	100	15	1,500	40	11	440	1,360	76	103,360	17,630	1.5	26,400	11,270	1.5	16,900	53,790
Madison	330	20	6,600				683	95	64,880	39,160	1.6	62,650	22,210	1.0	22,200	126,690
Mahaska	405	20	8,100				920	75	69,000	33,210	1.8	59,700	1,130	1.5	1,690	91,710
Marion	445	20	8,900				720	80	57,600	31,620	2.0	63,240	875	1.7	1,480	111,820

ACREAGE YIELD PER ACRE AND TOTAL YIELD BY COUNTIES—CONTINUED.

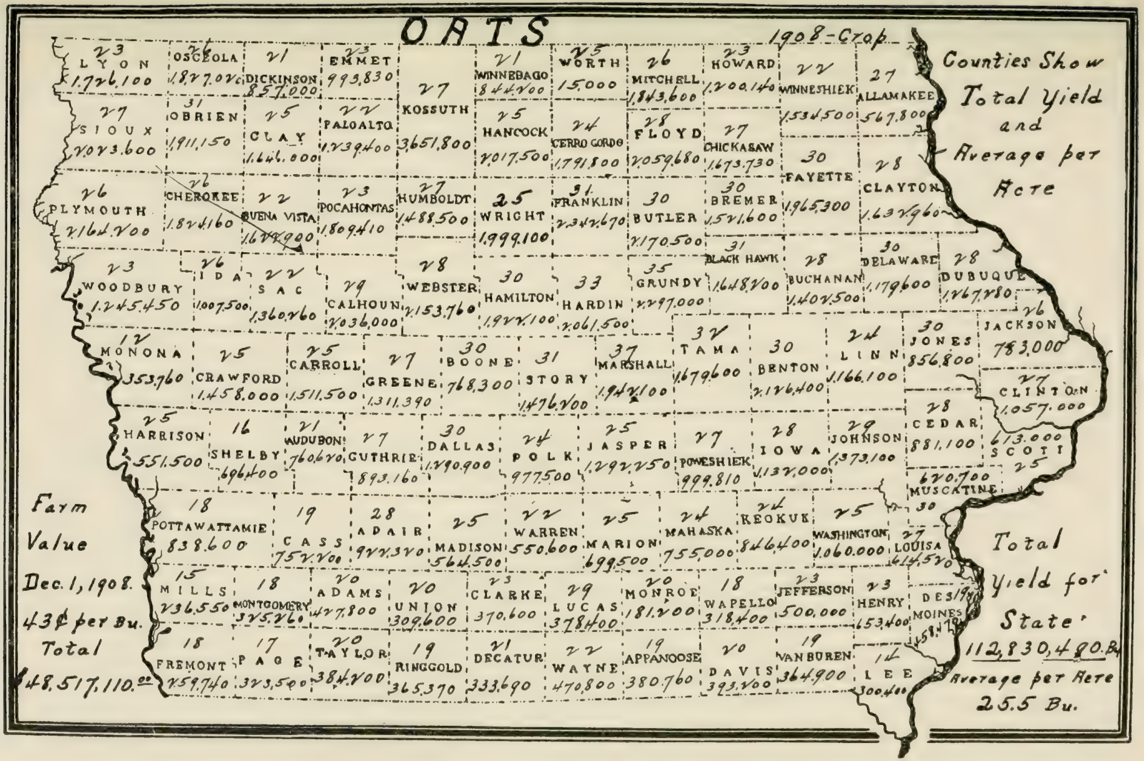
Counties	Rye			Flax Seed			Potatoes			Hay (Tame)			Hay (Wild)			
	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Bushels per acre	Total Bushels	Acres	Tons per acre	Tons	Acres	Tons per acre	Total Tons	Pastures—Acres
Marshall	380	24	9,120	30	12	360	1,670	120	200,400	35,860	1.8	64,500	2,160	1.7	3,670	84,930
Mills	265	18	4,770	----------	----	----------	760	50	38,000	20,050	1.3	2,660	4,770	1.3	6,200	60,540
Mitchell	210	17	3,570	5,850	10	58,500	1,240	95	117,800	28,210	1.6	45,130	2,730	1.2	3,270	57,050
Monona	315	14	4,410	150	11	1,650	1,250	90	112,500	10,820	2.0	21,640	16,050	2.0	32,100	86,430
Monroe	270	12	3,240	----------	----	----------	505	53	26,765	31,220	1.3	40,580	147	1.0	1,400	83,020
Montgomery	68	14	950	----------	----	----------	657	70	45,900	29,120	1.8	52,400	1,100	1.5	1,650	69,570
Muscatine	2,620	17	44,500	----------	----	----------	2,230	90	200,700	24,020	2.0	48,000	1,630	1.9	3,000	67,730
O'Brien	110	18	1,980	180	10	1,800	1,305	105	137,000	27,400	2.1	57,500	10,850	1.7	18,400	58,370
Osceola	240	16	3,800	820	8	6,500	585	91	53,200	17,800	1.5	26,700	9,200	1.4	12,800	34,830
Page	650	15	9,750	----------	----	----------	890	65	57,850	29,860	1.8	53,740	4,200	1.5	6,300	98,110
Palo Alto	60	16	960	700	11	7,700	1,240	95	117,800	14,430	1.7	24,500	30,940	1.4	43,300	57,660
Plymouth	165	19	3,100	395	10	3,900	1,870	96	179,500	27,290	2.4	65,490	24,290	1.9	46,100	112,480
Pocahontas	128	20	2,560	830	12	9,960	970	74	71,700	16,810	2.0	33,600	24,850	1.5	37,200	68,640
Polk	310	16	4,960	----------	----	----------	2,130	80	170,400	26,970	1.7	45,840	6,880	1.2	8,250	82,630
Pottawattamie	265	16	4,240	----------	----	----------	2,710	75	203,250	44,560	1.9	84,660	11,580	1.0	11,580	125,150
Poweshiek	190	16	3,040	----------	----	----------	940	65	61,100	41,590	1.7	70,700	2,180	1.0	2,180	110,800
Ringgold	290	20	5,800	----------	----	----------	425	76	32,300	48,670	1.7	82,700	340	1.1	370	109,460
Sac	49	20	980	176	8	1,400	1,080	112	120,960	25,680	2.1	53,920	13,270	1.5	19,900	81,060
Scott	1,210	19	22,900	----------	----	----------	6,090	110	669,900	37,810	2.1	89,400	5,000	1.5	7,500	67,720
Shelby	108	25	2,700	90	10	900	1,295	90	116,550	36,580	1.8	65,800	6,450	1.5	9,670	87,030
Sioux	100	18	1,800	113	10	1,100	1,420	85	120,700	24,160	1.8	43,400	19,610	1.2	23,500	79,390
Story	250	18	4,500	40	11	440	860	130	111,800	27,210	1.9	51,600	12,250	1.2	14,700	74,680
Tama	370	19	7,030	----------	----	----------	2,100	100	210,000	21,370	2.0	42,740	4,310	1.1	4,740	121,260
Taylor	680	20	13,600	----------	----	----------	610	80	48,800	44,720	1.8	80,400	1,450	1.3	1,880	114,930
Union	106	17	1,800	----------	----	----------	640	62	39,680	34,380	1.7	58,400	1,120	1.4	1,560	81,100
Van Buren	1,850	14	25,900	----------	----	----------	470	50	23,500	38,690	1.7	65,700	210	1.5	310	181,920

Wapello	980	16	15,680				820	61	50,000	30,500	1.9	57,950	10	1.5	15	84,290
Warren	400	18	7,200				990	130	128,700	43,400	1.6	69,400	1,380	1.0	1,380	111,200
Washington	650	20	13,000				686	60	41,160	38,160	2.2	83,900	110	1.9	200	91,480
Wayne	300	15	4,500				515	64	32,960	64,145	1.8	115,400	3,020	1.0	3,020	121,680
Webester	140	16	2,200				1,140	75	85,500	23,500	2.1	49,300	30,080	1.6	48,100	96,950
Winnebago	70	19	1,120	1,846	9	16,600	630	100	63,000	14,010	1.7	23,800	18,980	1.2	22,700	46,450
Winneshiek	377	20	7,540	6,710	10	67,100	1,150	62	71,300	47,240	1.8	85,000	11,920	1.0	11,920	119,140
Woodbury	440	18	7,900	140	10	1,400	1,900	85	161,500	23,160	1.8	41,600	15,590	1.8	28,000	94,020
Worth	148	17	2,500	3,510	12	42,100	620	55	28,600	17,230	2.1	36,100	14,150	1.6	22,640	51,340
Wright	9	18	160	300	11	3,300	1,000	90	90,000	31,310	1.9	59,400	10,430	1.3	13,500	71,930
Total acreage	50,893			40,833			118,517			3,252,370			869,062			8,966,180
Total yield			869,072			461,580			10,658,290			5,838,640			1,445,980	
Average per acre		17.1			11.3			89.9			1.8			1.6		


CORN
1908-Crop
Counties Show Total Yield and Average per Acre
38 LYON 3.369.400
29 OSCEOLA 1.363.580
25 DICKINSON 959.000
27 EMMET 1.224.180
31 KOSSUTH 3651800
31 WINNEBAGO 1.394.380
31 WORTH 1.133.900
32 MITCHELL 1.759.000
27 HOWARD 1.193.900
33 WINNESHIEK 2.157.540
32 ALLAMAKEE 1.218.200
42 SIOUX 6480.180
39 OBRIEN 2768.200
32 CLAY 2.260.800
28 PALOALTO 1480300
32 HANCOCK 2.290.200
32 CERRO GORDO 2.818.000
33 FLOYD 2.501.070
35 CHICKASAW 1.470.700
33 FAYETTE 2.841.630
40 CLAYTON 2.942.400
41 PLYMOUTH 7.204.100
41 CHEROKEE 4.458.000
34 BUENA VISTA 3.242.208
30 POCAHONTAS 2.349.600
32 HUMBOLDT 2.115.200
35 WRIGHT 3201.100
37 FRANKLIN 3674.100
36 BUTLER 3829.680
37 BREMER 2.271.800
34 WOODBURY 5.905.800
36 IDA 3.174.900
39 SAC 4.276.350
36 CALHOUN 3450600
30 WEBSTER 3046800
38 HAMILTON 3624400
39 HARDIN 3903.900
4 GRUNDY 4.191.600
40 BLACK HAWK 3.721.600
34 BUCHANAN 2745.000
34 DELAWARE 3148.400
40 DUBUQUE 2541.200
30 MONONA 3630000
39 CRAWFORD 5.267.700
38 CARROLL 4.028.000
41 GREENE 4.248.400
39 BOONE 3681.600
45 STORY 4563000
45 MARSHALL 4.606.200
43 TAMA 5.052900
42 BENTON 5.557.000
39 LINN 3912.800
36 JONES 2.705.000
36 JACKSON 2.574.000
4.371.510 CLINTON 39
30 HARRISON 3.774.300
34 SHELBY 3953160
35 AUDUBON 3007.009
43 GUTHRIE 3608.900
42 DALLAS 4672.080
41 POLK 3737.970
41 JASPER 4.971.200
39 POWESHIEK 3935.100
39 IOWA 3.759.210
40 JOHNSON 4.099.600
40 CEDAR 4.138.800
3.016.400 SCOTT 38
2.651.000 MUSCATINE 41
31 POTTAWATTAMIE 5614.720
36 CASS 3647500
39 ADAIR 3.361.400
41 MADISON 3.341.090
34 WARREN 2.538.780
38 MARION 3581500
34 MAHASKA 3.075.900
39 KEOKUK 3.496.700
40 WASHINGTON 3564.800
36 LOUISA 2.247.480
34 MILLS 2987.200
30 MONTGOMERY 2472.000
30 ADAMS 2.07600
28 UNION 1.326.000
34 CLARKE 1.736.700
32 LUCAS 1.476.160
31 MONROE 1.122.200
28 WAPELLO 1.214.300
38 JEFFERSON 1.916.720
38 HENRY 2662.200
35 DES MOINES 2.076.000
28 FREMONT 2.912.000
27 PAGE 2768800
28 TAYLOR 2.228.240
33 RINGGOLD 2003.700
32 DECATUR 1.763.200
32 WAYNE 2.139.000
30 APPANOOSE 1.569.000
27 DAVIS 1.172.280
26 VAN BUREN 1.130.700
32 LEE 1.765.760
Farm Value Dec. 1, 1908 51¢ per Bu. $153.955.306.
Total Yield for State 301.873.150 bu.
Average per Acre 35.9 Bu.

OATS

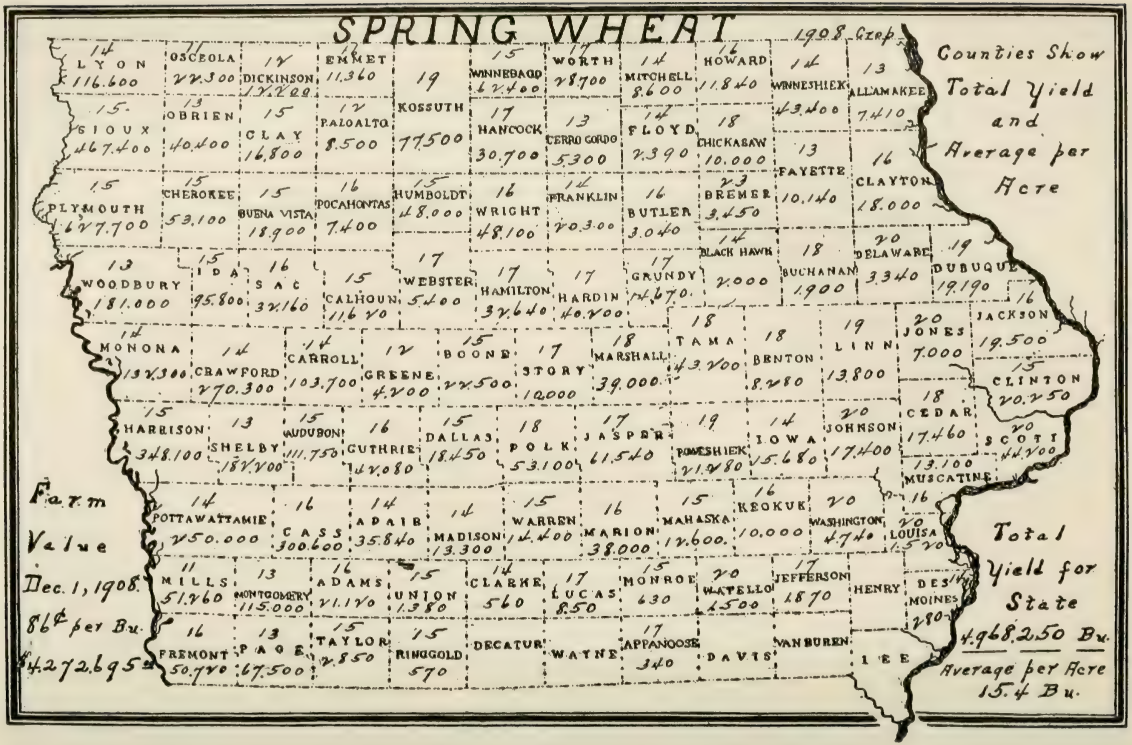
1908-Crop


LYON 23 1,726,100
OSCEOLA 26 1,827,020
DICKINSON 21 857,000
EMMET 23 993,830
KOSSUTH 27 3,651,800
WINNEBAGO 21 844,200
WORTH 25 15,000
MITCHELL 26 1,843,600
HOWARD 23 1,200,140
WINNESHIEK 22 1,534,500
ALLAMAKEE 27 567,800
SIOUX 27 2,023,600
OBRIEN 31 1,911,150
CLAY 25 1,646,000
PALOALTO 22 1,239,400
HANCOCK 25 2,017,500
CERRO GORDO 24 1,791,800
FLOYD 28 2,059,680
CHICKASAW 27 1,673,730
FAYETTE 30 1,965,300
CLAYTON 28 1,632,960
PLYMOUTH 26 2,164,200
CHEROKEE 26 1,824,160
BUENA VISTA 22 1,622,900
POCAHONTAS 23 1,809,410
HUMBOLDT 27 1,488,500
WRIGHT 25 1,999,100
FRANKLIN 31 2,342,670
BUTLER 30 2,170,500
BREMER 30 1,521,600
WOODBURY 23 1,245,450
IDA 26 1,007,500
SAC 22 1,360,260
CALHOUN 29 2,036,000
WEBSTER 28 2,153,760
HAMILTON 30 1,922,100
HARDIN 33 2,061,500
GRUNDY 35 2,297,000
BLACK HAWK 31 1,648,200
BUCHANAN 28 1,402,500
DELAWARE 30 1,179,600
DUBUQUE 28 1,267,280
JACKSON 26 783,000
MONONA 12 353,760
CRAWFORD 25 1,458,000
CARROLL 25 1,511,500
GREENE 27 1,311,390
BOONE 30 768,300
STORY 31 1,476,200
MARSHALL 37 1,942,100
TAMA 32 1,679,600
BENTON 30 2,126,400
LINN 24 1,166,100
JONES 30 856,800
CLINTON 27 1,057,000
HARRISON 25 551,500
SHELBY 16 696,400
AUDUBON 21 760,620
GUTHRIE 27 893,160
DALLAS 30 1,290,900
POLK 24 977,500
JASPER 25 1,292,250
POWESHIEK 27 999,810
IOWA 28 1,132,000
JOHNSON 29 1,373,100
CEDAR 28 881,100
SCOTT 25 613,000
MUSCATINE 30 620,700
POTTAWATTAMIE 18 838,600
CASS 19 752,200
ADAIR 28 922,320
MADISON 25 564,500
WARREN 22 550,600
MARION 25 699,500
MAHASKA 24 755,000
KEOKUK 24 846,400
WASHINGTON 25 1,060,000
LOUISA 27 614,520
MILLS 15 236,550
MONTGOMERY 18 325,260
ADAMS 20 427,800
UNION 20 309,600
CLARKE 23 370,600
LUCAS 29 378,400
MONROE 20 181,200
WAPELLO 18 318,400
JEFFERSON 23 500,000
HENRY 23 153,400
DES MOINES 19 458,470
FREMONT 18 259,740
PAGE 17 323,500
TAYLOR 20 384,200
RINGGOLD 19 365,370
DECATUR 21 333,690
WAYNE 22 470,800
APPANOOSE 19 380,760
DAVIS 20 393,200
VAN BUREN 19 364,900
LEE 14 300,400

Counties Show Total Yield and Average per Acre

Farm Value Dec. 1, 1908. 43¢ per Bu. Total $48,517,110.00

Total Yield for State 112,830,490 Bu. Average per Acre 25.5 Bu.

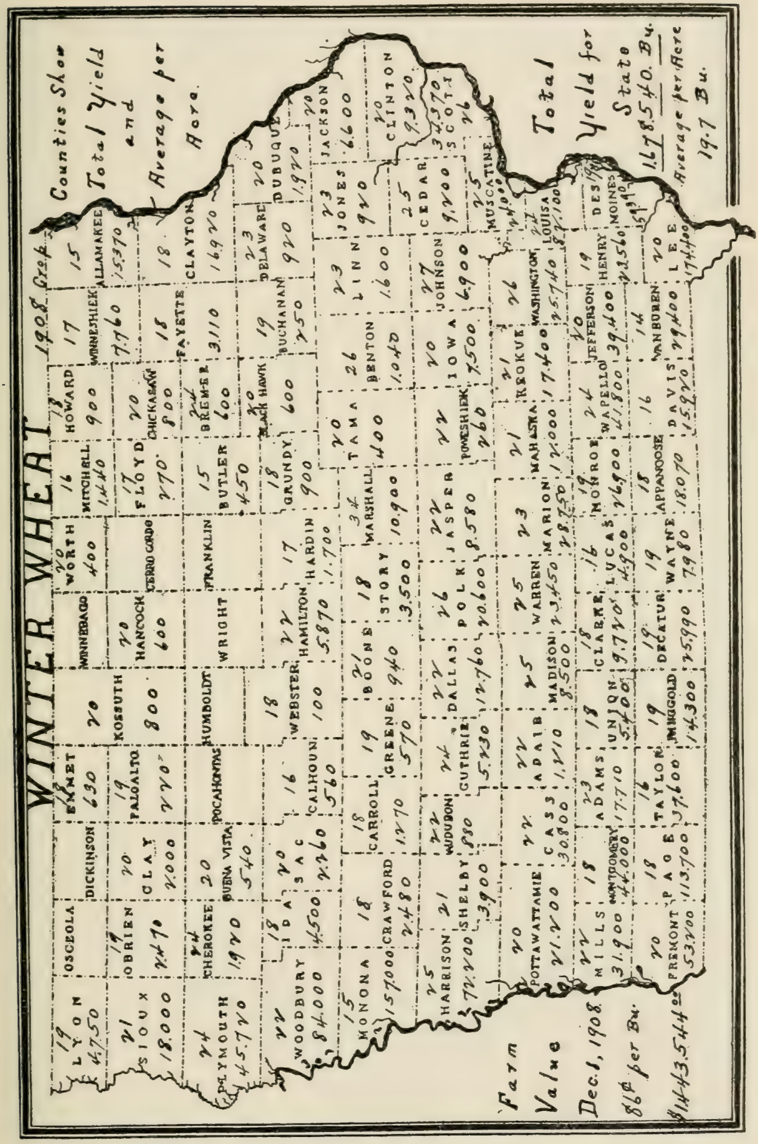

SPRING WHEAT
1908 Crop
14 LYON 116.600
11 OSCEOLA 22.300
12 DICKINSON 12.200
12 EMMET 11.360
19 KOSSUTH 77500
15 WINNEBAGO 62.400
17 WORTH 28700
14 MITCHELL 8.600
16 HOWARD 11.840
14 WINNESHIEK 43.400
13 ALLAMAKEE 7.410
15 SIOUX 467.400
13 OBRIEN 40.400
15 CLAY 16,800
12 PALOALTO 8.500
17 HANCOCK 30.700
13 CERRO GORDO 5.300
14 FLOYD 2.390
18 CHICKASAW 10.000
13 FAYETTE 10.140
16 CLAYTON 18.000
15 PLYMOUTH 627.700
15 CHEROKEE 53.100
15 BUENA VISTA 18.900
16 POCAHONTAS 7.400
15 HUMBOLDT 48.000
16 WRIGHT 48.100
14 FRANKLIN 203.00
16 BUTLER 3.040
23 BREMER 3.450
13 WOODBURY 181.000
15 IDA 95.800
16 SAC 32.160
15 CALHOUN 116 20
17 WEBSTER 5.400
17 HAMILTON 32.640
17 HARDIN 40.200
17 GRUNDY 24.670.
14 BLACK HAWK 2.000
18 BUCHANAN 1.900
20 DELAWARE 3.340
19 DUBUQUE 19.190
16 JACKSON 19.500
14 MONONA 132.300
14 CRAWFORD 270.300
14 CARROLL 103.700
12 GREENE 4.200
15 BOONE 22.500
17 STORY 10,000
18 MARSHALL 39.000
18 TAMA 43.200
18 BENTON 8.280
19 LINN 13.800
20 JONES 7.000
15 CLINTON 20.250
15 HARRISON 348.100
13 SHELBY 182.200
15 AUDUBON 111.750
16 GUTHRIE 142.080
15 DALLAS 18.450
18 POLK 53.100
17 JASPER 61.540
19 POWESHIEK 21.280
14 IOWA 25.680
20 JOHNSON 17.400
18 CEDAR 17.460
20 SCOTT 44.200
13.100 MUSCATINE 16
14 POTTAWATTAMIE 250.000
16 CASS 300.600
14 ADAIR 35.840
14 MADISON 13.300
15 WARREN 14.400
16 MARION 38.000
15 MAHASKA 12.600.
16 KEOKUK 10.000
20 WASHINGTON 4.740
20 LOUISA 1.520
11 MILLS 51.260
13 MONTGOMERY 115.000
16 ADAMS 21.120
15 UNION 1.380
14 CLARKE 560
17 LUCAS 8.50
15 MONROE 630
20 WAPELLO 1.500
17 JEFFERSON 1870
HENRY
14 DES MOINES 280
16 FREMONT 50.720
13 PAGE 67.500
15 TAYLOR 2.850
15 RINGGOLD 570
DECATUR
WAYNE
17 APPANOOSE 340
DAVIS
VAN BUREN
LEE

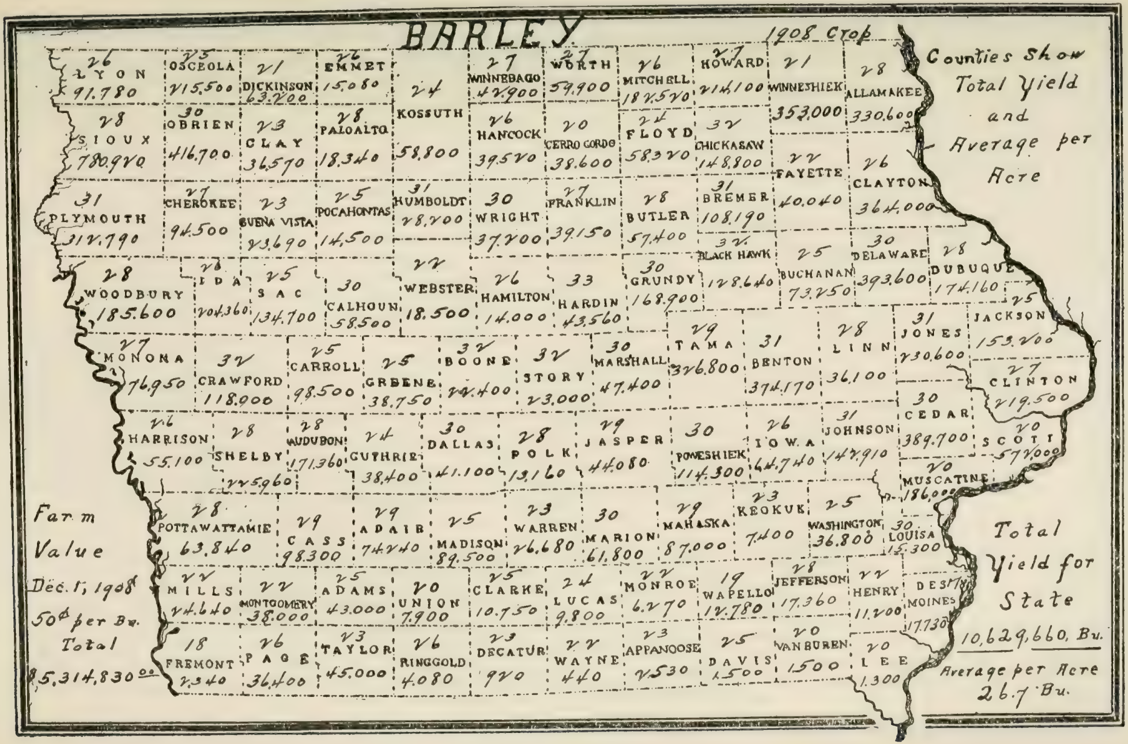
Counties Show Total Yield and Average per Acre

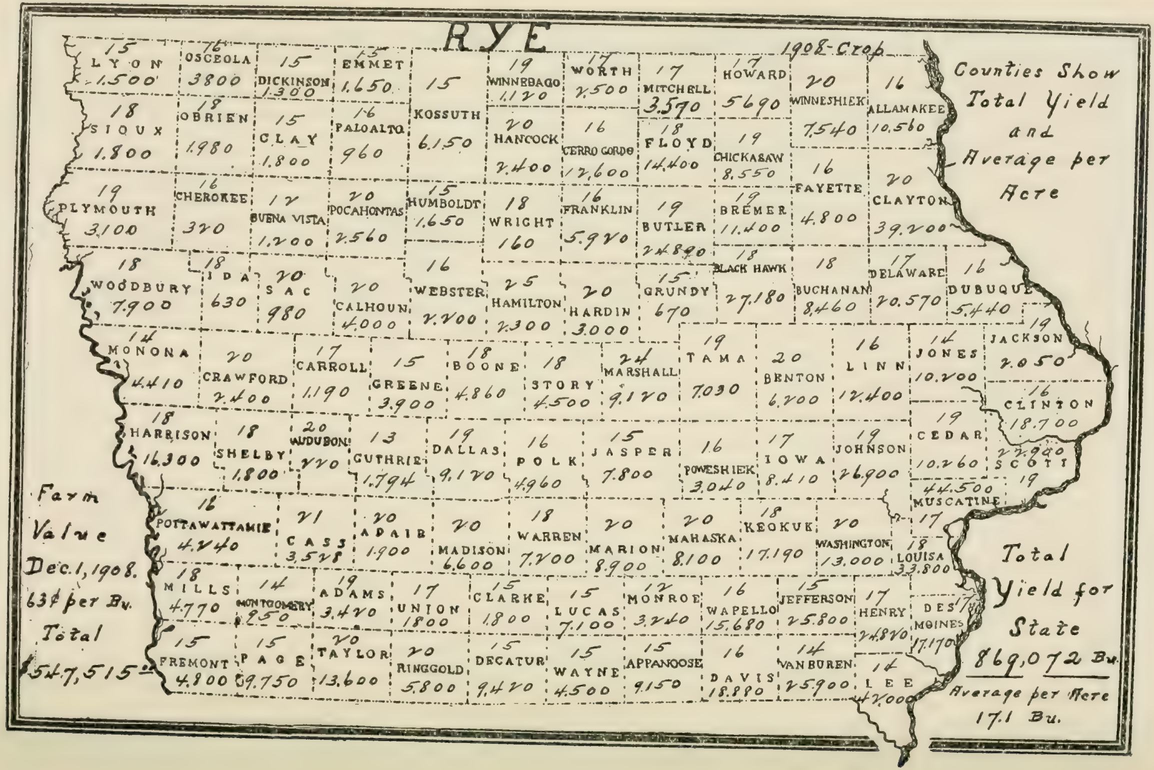
Total Yield for State 4.968.250 Bu.

Average per Acre 15.4 Bu.

Farm Value Dec. 1, 1908. 86¢ per Bu. $4.272.695.00


WINTER WHEAT
1908 Crop
Counties Show Total Yield and Average per Acre.
LYON 19 4.750
OSCEOLA
DICKINSON
EMMET 18 630
KOSSUTH 20 800
WINNEBAGO
WORTH 20 400
MITCHELL 16 1.440
HOWARD 18 900
WINNESHIEK 17 7.760
ALLAMAKEE 15 15.370
SIOUX 21 18.000
O'BRIEN 17 2.470
CLAY 20 2.000
PALO ALTO 19 2.220
HANCOCK 20 600
CERRO GORDO
FLOYD 17 2.720
CHICKASAW 20 800
FAYETTE 18 3.110
CLAYTON 18 16.920
PLYMOUTH 24 45.720
CHEROKEE 24 1.970
BUENA VISTA 20 540
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER 15 450
BREMER 24 600
BLACK HAWK 20 600
GRUNDY 18 900
BUCHANAN 19 250
DELAWARE 23 920
DUBUQUE 20 1.970
WOODBURY 22 84.000
IDA 18 4.500
SAC 20 2.260
CALHOUN 16 560
WEBSTER 18 100
HAMILTON 22 5.870
HARDIN 17 1.700
TAMA 20 400
BENTON 26 1.040
LINN 23 1.600
JONES 23 920
JACKSON 20 6.600
CLINTON 20 9.320
MONONA 15 157.000
CRAWFORD 18 2.480
CARROLL 18 1.270
GREENE 19 570
BOONE 21 940
STORY 18 3.500
MARSHALL 34 10.900
HARRISON 25 72.200
SHELBY 21 3.900
AUDUBON 22 880
GUTHRIE 24 5.230
DALLAS 22 12.760
POLK 26 20.600
JASPER 22 8.580
POWESHIEK 22 260
IOWA 20 7.500
JOHNSON 27 6.900
CEDAR 25 9.200
SCOTT 26 34.570
MUSCATINE 25 24.000
POTTAWATTAMIE 20 21.200
CASS 22 30.800
ADAIR 22 1.210
MADISON 25 8.500
WARREN 25 23.450
MARION 23 28.750
MAHASKA 21 12.000
KEOKUK 21 17.400
WASHINGTON 26 25.740
LOUISA 24 57.100
MILLS 22 31.900
MONTGOMERY 18 44.000
ADAMS 23 17.710
UNION 18 5.400
CLARKE 18 9.770
LUCAS 16 4.900
MONROE 19 26.900
WAPELLO 24 41.800
JEFFERSON 20 39.400
HENRY 19 21.560
DES MOINES 19 15.990
FREMONT 20 53.200
PAGE 18 113.700
TAYLOR 16 37.600
RINGGOLD 19 14.300
DECATUR 19 25.990
WAYNE 19 7.980
APPANOOSE 18 18.070
DAVIS 16 15.220
VAN BUREN 14 29.400
LEE 20 17.400
Total Yield for State 1.678.540. Bu.
Average per Acre 19.7 Bu.
Farm Value Dec. 1, 1908. 86¢ per Bu.
$1.443.544⁰⁰


BARLEY
1908 Crop
Counties Show Total Yield and Average per Acre
26 LYON 91.780
25 OSCEOLA 215.500
21 DICKINSON 63.200
26 EMMET 15.080
24 KOSSUTH 58.800
27 WINNEBAGO 42.900
27 WORTH 59.900
26 MITCHELL 182.520
27 HOWARD 214.100
21 WINNESHIEK 353.000
28 ALLAMAKEE 330.600
28 SIOUX 780.920
30 OBRIEN 416.700
23 CLAY 36.570
28 PALOALTO 18.340
26 HANCOCK 39.520
20 CERRO GORDO 38.600
24 FLOYD 58.320
32 CHICKASAW 148.800
22 FAYETTE 40.040
26 CLAYTON 364.000
31 PLYMOUTH 312.790
27 CHEROKEE 94.500
23 BUENA VISTA 23.690
25 POCAHONTAS 14.500
31 HUMBOLDT 28.200
30 WRIGHT 37.200
27 FRANKLIN 39.150
28 BUTLER 57.400
31 BREMER 108.190
32 BLACK HAWK 128.640
25 BUCHANAN 73.250
30 DELAWARE 393.600
28 DUBUQUE 174.160
28 WOODBURY 185.600
28 IDA 204.360
25 SAC 134.700
30 CALHOUN 58.500
22 WEBSTER 18.500
26 HAMILTON 14.000
33 HARDIN 43.560
30 GRUNDY 168.900
29 TAMA 326.800
31 BENTON 374.170
28 LINN 36.100
31 JONES 230.600
25 JACKSON 153.200
27 CLINTON 219.500
27 MONONA 76.950
32 CRAWFORD 118.900
25 CARROLL 98.500
25 GREENE 38.750
32 BOONE 22.400
32 STORY 23.000
30 MARSHALL 47.400
26 HARRISON 55.100
28 SHELBY 225.960
28 AUDUBON 171.360
24 GUTHRIE 38.400
30 DALLAS 41.100
28 POLK 13.160
29 JASPER 44.080
30 POWESHIEK 114.300
26 IOWA 64.740
31 JOHNSON 147.910
30 CEDAR 389.700
20 SCOTT 572.000
20 MUSCATINE 186.000
28 POTTAWATTAMIE 63.840
29 CASS 98.300
29 ADAIR 74.240
25 MADISON 89.500
23 WARREN 26.680
30 MARION 61.800
29 MAHASKA 87.000
23 KEOKUK 7.400
25 WASHINGTON 36.800
30 LOUISA 15.300
22 MILLS 24.640
22 MONTGOMERY 38.000
25 ADAMS 43.000
20 UNION 7.900
25 CLARKE 10.750
24 LUCAS 9.800
22 MONROE 6.270
19 WAPELLO 12.780
28 JEFFERSON 17.360
22 HENRY 11.200
18 DES MOINES 17.730
18 FREMONT 2.340
26 PAGE 36.400
23 TAYLOR 45.000
26 RINGGOLD 4.080
23 DECATUR 920
22 WAYNE 440
23 APPANOOSE 2.530
25 DAVIS 1.500
20 VAN BUREN 1.500
20 LEE 1.300
Farm Value Dec. 1, 1908 50¢ per Bu. Total $5,314,830.00
Total Yield for State 10,629,660 Bu.
Average per Acre 26.7 Bu.


RYE

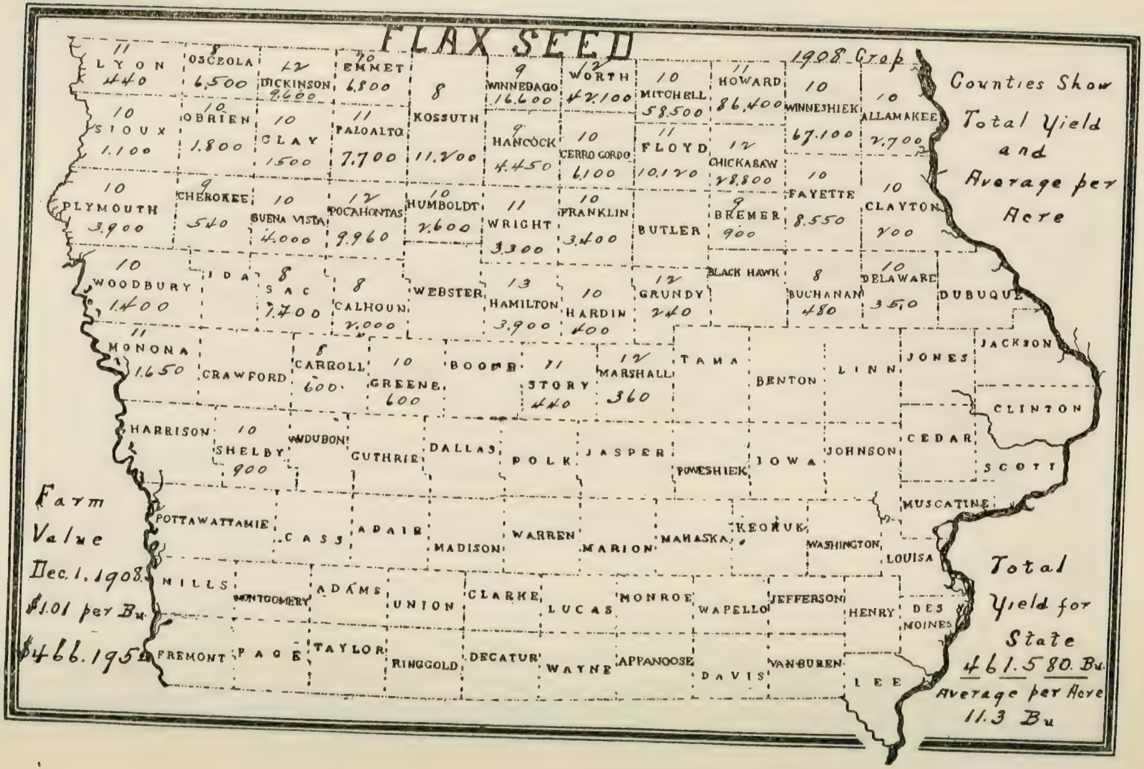
1908-Crop

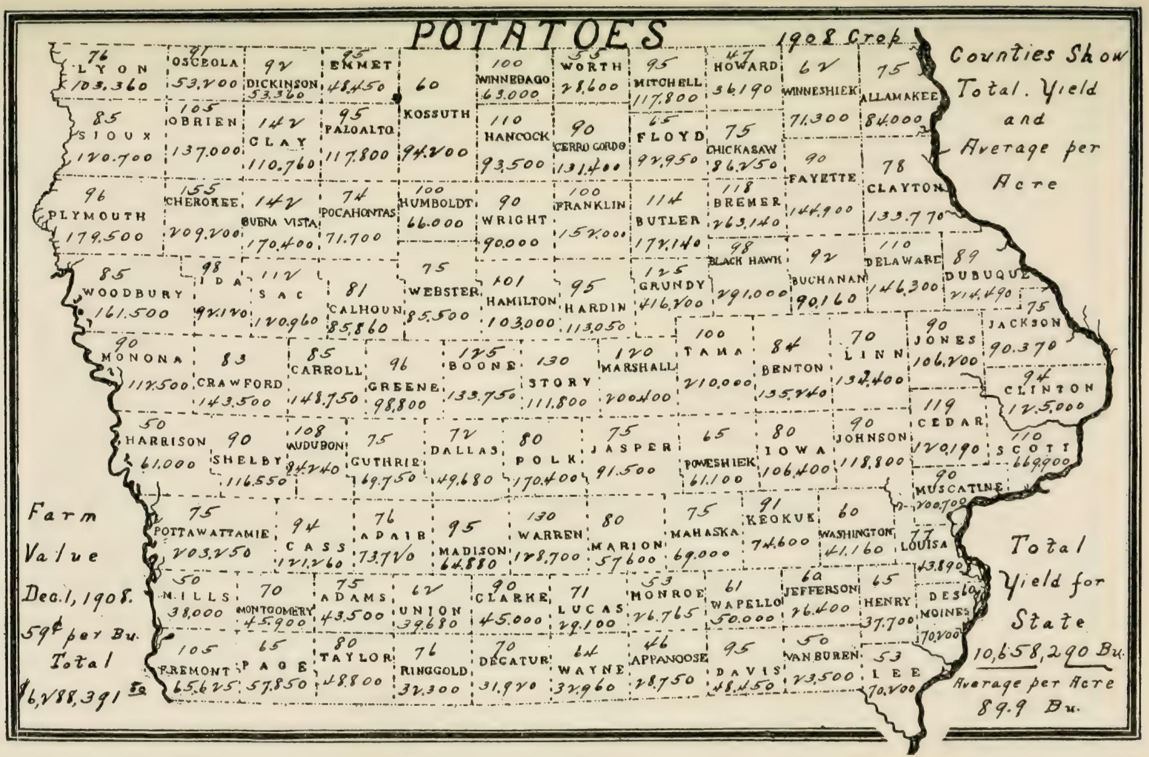
Counties Show Total Yield and Average per Acre

Farm Value Dec. 1, 1908. 63¢ per Bu. Total $547,515.00

Total Yield for State 869,072 Bu. Average per Acre 17.1 Bu.

15 LYON 1.500
16 OSCEOLA 3800
15 DICKINSON 1.300
15 EMMET 1.650
15 KOSSUTH 6.150
19 WINNEBAGO 1.120
17 WORTH 2.500
17 MITCHELL 3.570
17 HOWARD 5690
20 WINNESHIEK 7.540
16 ALLAMAKEE 10.560
18 SIOUX 1.800
18 OBRIEN 1.980
15 CLAY 1.800
16 PALOALTO 960
20 HANCOCK 2.400
16 CERRO GORDO 12.600
18 FLOYD 14.400
19 CHICKASAW 8.550
19 PLYMOUTH 3.100
16 CHEROKEE 320
12 BUENA VISTA 1.200
20 POCAHONTAS 2.560
15 HUMBOLDT 1.650
18 WRIGHT 160
16 FRANKLIN 5.920
19 BUTLER 24.890
19 BREMER 11.400
16 FAYETTE 4.800
20 CLAYTON 39.200
18 WOODBURY 7.900
18 IDA 630
20 SAC 980
20 CALHOUN 4.000
16 WEBSTER 2.200
25 HAMILTON 2.300
20 HARDIN 3.000
15 GRUNDY 670
18 BLACK HAWK 27.180
18 BUCHANAN 8.460
17 DELAWARE 20.570
16 DUBUQUE 5.440
14 MONONA 4.410
20 CRAWFORD 2.400
17 CARROLL 1.190
15 GREENE 3.900
18 BOONE 4.860
18 STORY 4.500
24 MARSHALL 9.120
19 TAMA 7.030
20 BENTON 6.200
16 LINN 12.400
14 JONES 10.200
19 JACKSON 2.050
16 CLINTON 18.700
18 HARRISON 16.300
18 SHELBY 1.800
20 AUDUBON 220
13 GUTHRIE 1.794
19 DALLAS 9.120
16 POLK 4.960
15 JASPER 7.800
16 POWESHIEK 3.040
17 IOWA 8.410
19 JOHNSON 26.900
19 CEDAR 10.260
22.900 SCOTT 19
44.500 MUSCATINE 17
16 POTTAWATTAMIE 4.240
21 CASS 3.528
20 ADAIR 1.900
20 MADISON 6.600
18 WARREN 7.200
20 MARION 8.900
20 MAHASKA 8.100
18 KEOKUK 17.190
20 WASHINGTON 13.000
18 LOUISA 33.800
18 MILLS 4.770
14 MONTGOMERY 950
19 ADAMS 3.420
17 UNION 1800
15 CLARKE 1.800
15 LUCAS 7.100
12 MONROE 3.240
16 WAPELLO 15.680
15 JEFFERSON 25.800
17 HENRY 24.820
17 DES MOINES 17.170
15 FREMONT 4.900
15 PAGE 39.750
20 TAYLOR 13.600
20 RINGGOLD 5.800
15 DECATUR 9.420
15 WAYNE 4.500
15 APPANOOSE 9.150
16 DAVIS 18.880
14 VAN BUREN 25.900
14 LEE 42.000


FLAX SEED
1908 Crop
Counties Show Total Yield and Average per Acre
LYON 11 440
OSCEOLA 8 6.500
DICKINSON 12 9.600
EMMET 10 6.800
KOSSUTH 8 11.200
WINNEBAGO 9 16.600
WORTH 12 42.100
MITCHELL 10 58.500
HOWARD 11 86.400
WINNESHIEK 10 67.100
ALLAMAKEE 10 2.700
SIOUX 10 1.100
OBRIEN 10 1.800
CLAY 10 1500
PALOALTO 11 7.700
HANCOCK 9 4.450
CERRO GORDO 10 6.100
FLOYD 11 10.120
CHICKASAW 12 28.800
FAYETTE 10 8.550
CLAYTON 10 200
PLYMOUTH 10 3.900
CHEROKEE 9 540
BUENA VISTA 10 4.000
POCAHONTAS 12 9.960
HUMBOLDT 10 2.600
WRIGHT 11 3300
FRANKLIN 10 3.400
BUTLER
BREMER 9 900
WOODBURY 10 1.400
IDA
SAC 8 7.700
CALHOUN 8 2.000
WEBSTER
HAMILTON 13 3.900
HARDIN 10 400
GRUNDY 12 240
BLACK HAWK
BUCHANAN 8 480
DELAWARE 10 350
DUBUQUE
MONONA 11 1.650
CRAWFORD
CARROLL 8 600
GREENE 10 600
BOONE
STORY 11 440
MARSHALL 12 360
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
HARRISON
SHELBY 10 900
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE
Farm Value Dec. 1, 1908. $1.01 per Bu. $466.195
Total Yield for State 461.580 Bu.
Average per Acre 11.3 Bu



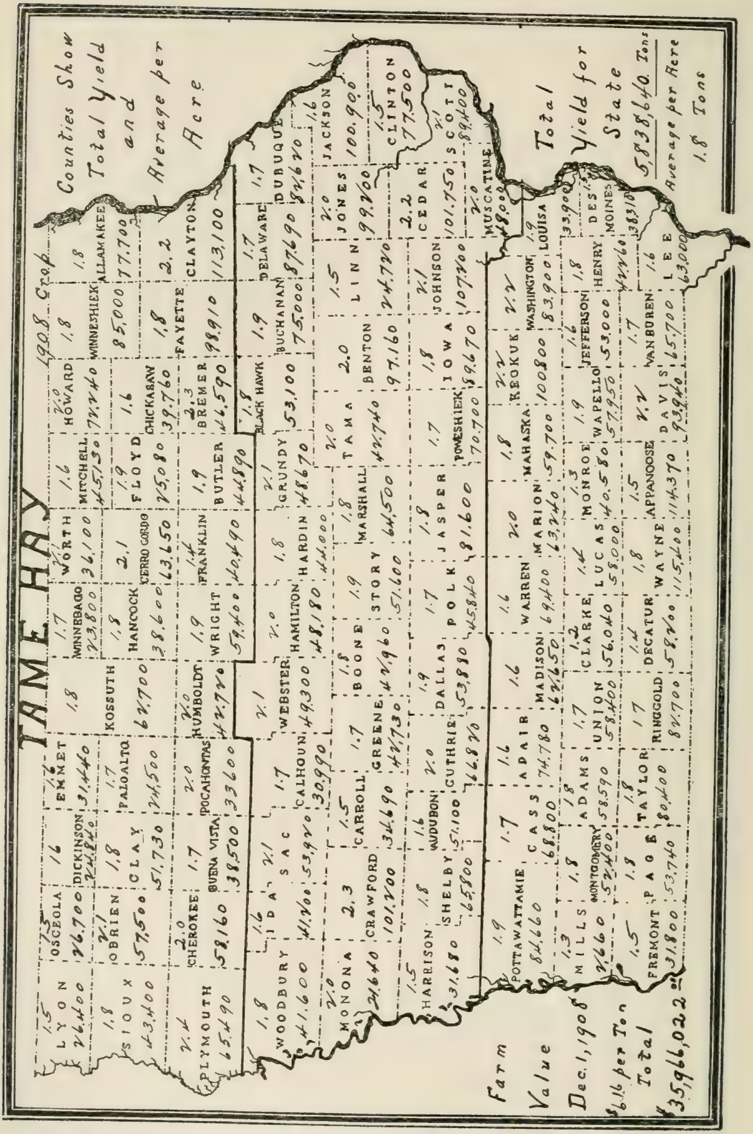
POTATOES 1908 Crop

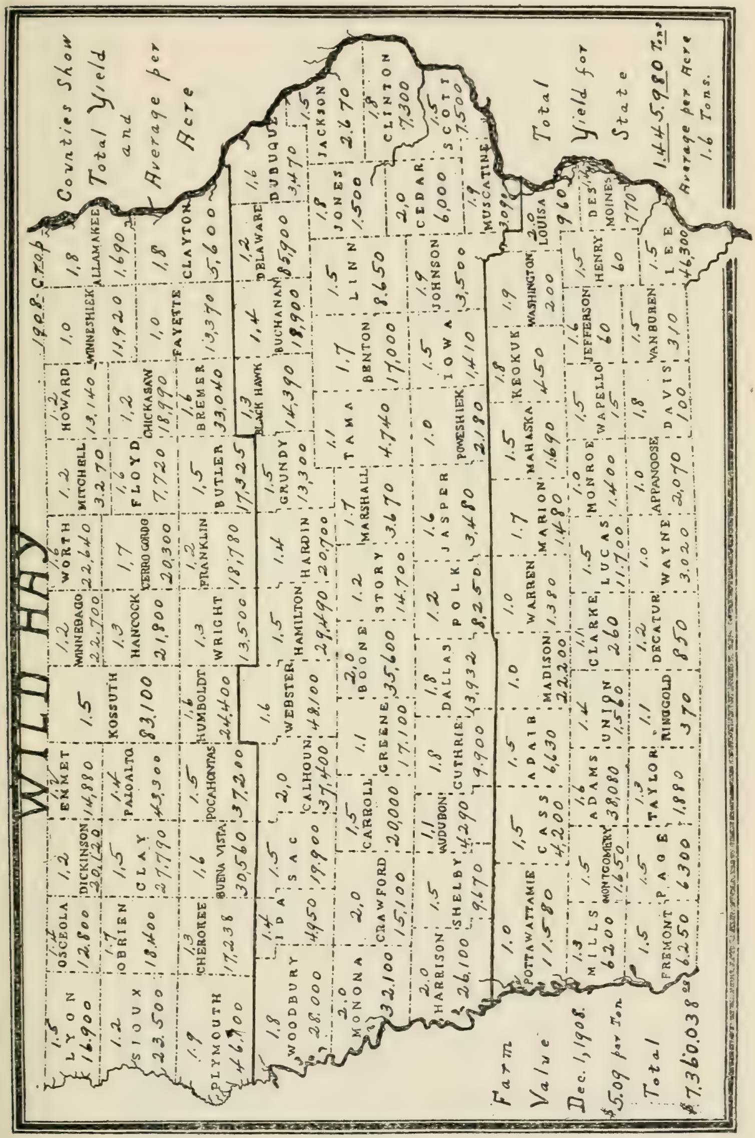
Counties Show Total. Yield and Average per Acre

Farm Value Dec. 1, 1908. 59¢ per Bu. Total $6,288,391 [00]

Total Yield for State 10,658,290 Bu. Average per Acre 89.9 Bu.

76 LYON 103,360
91 OSCEOLA 53,200
92 DICKINSON 53,360
95 EMMET 48,450
60 KOSSUTH 94,200
100 WINNEBAGO 63,000
55 WORTH 28,600
95 MITCHELL 117,800
47 HOWARD 36,190
62 WINNESHIEK 71,300
75 ALLAMAKEE 84,000
85 SIOUX 120,700
105 OBRIEN 137,000
142 CLAY 110,760
95 PALOALTO 117,800
110 HANCOCK 93,500
90 CERRO GORDO 131,400
65 FLOYD 92,950
75 CHICKASAW 86,250
90 FAYETTE 144,900
78 CLAYTON 133,770
96 PLYMOUTH 179,500
155 CHEROKEE 209,200
142 BUENA VISTA 170,400
74 POCAHONTAS 71,700
100 HUMBOLDT 66,000
90 WRIGHT 90,000
100 FRANKLIN 152,000
114 BUTLER 172,140
118 BREMER 263,140
98 BLACK HAWK 291,000
92 BUCHANAN 90,160
110 DELAWARE 146,300
89 DUBUQUE 214,490
85 WOODBURY 161,500
98 IDA 92,120
112 SAC 120,960
81 CALHOUN 85,860
75 WEBSTER 85,500
101 HAMILTON 103,000
95 HARDIN 113,050
125 GRUNDY 416,200
100 TAMA 210,000
84 BENTON 135,240
70 LINN 134,400
90 JONES 106,200
75 JACKSON 90,370
94 CLINTON 125,000
90 MONONA 112,500
83 CRAWFORD 143,500
85 CARROLL 148,750
96 GREENE 98,800
125 BOONE 133,750
130 STORY 111,800
120 MARSHALL 200,400
50 HARRISON 61,000
90 SHELBY 116,550
108 AUDUBON 84,240
75 GUTHRIE 69,750
72 DALLAS 49,680
80 POLK 170,400
75 JASPER 91,500
65 POWESHIEK 61,100
80 IOWA 106,400
90 JOHNSON 118,800
119 CEDAR 120,190
110 SCOTT 669,900
90 MUSCATINE 200,700
75 POTTAWATTAMIE 203,250
94 CASS 121,260
76 ADAIR 73,710
95 MADISON 64,880
130 WARREN 128,700
80 MARION 57,600
75 MAHASKA 69,000
91 KEOKUK 74,600
60 WASHINGTON 41,160
77 LOUISA 43,890
50 MILLS 38,000
70 MONTGOMERY 45,900
75 ADAMS 43,500
62 UNION 39,680
90 CLARKE 45,000
71 LUCAS 29,100
53 MONROE 26,765
61 WAPELLO 50,000
60 JEFFERSON 26,400
65 HENRY 37,700
60 DES MOINES 70,900
105 FREMONT 65,625
65 PAGE 57,850
80 TAYLOR 48,800
76 RINGGOLD 32,300
70 DECATUR 31,920
64 WAYNE 32,960
46 APPANOOSE 28,750
95 DAVIS 48,450
50 VAN BUREN 23,500
53 LEE 70,200


TAME HAY
1908 Crop
Counties Show Total Yield and Average per Acre
LYON 1.5 26,400
OSCEOLA 1.5 26,700
DICKINSON 1.6 24,840
EMMET 1.7 31,440
KOSSUTH 1.8 64,700
WINNEBAGO 1.7 23,800
WORTH 2.1 36,100
MITCHELL 1.6 45,130
HOWARD 2.0 24,240
WINNESHIEK 1.8 85,000
ALLAMAKEE 1.8 77,700
SIOUX 1.8 43,400
O'BRIEN 2.1 57,500
CLAY 1.8 51,730
PALO ALTO 1.7 24,500
HANCOCK 1.8 38,600
CERRO GORDO 2.1 63,650
FLOYD 1.9 25,080
CHICKASAW 1.6 39,760
FAYETTE 1.8 98,910
CLAYTON 2.2 113,100
PLYMOUTH 2.2 65,490
CHEROKEE 2.0 58,160
BUENA VISTA 1.7 38,500
POCAHONTAS 2.0 33,600
HUMBOLDT 2.0 44,720
WRIGHT 1.9 59,400
FRANKLIN 1.4 40,490
BUTLER 1.9 44,890
BREMER 2.3 46,590
BLACK HAWK 1.8 53,100
BUCHANAN 1.9 75,000
DELAWARE 1.7 87,690
DUBUQUE 1.7 84,620
JACKSON 1.6 100,900
CLINTON 1.5 77,500
WOODBURY 1.8 41,600
IDA 1.6 41,200
SAC 2.1 53,920
CALHOUN 1.7 30,990
WEBSTER 2.1 49,300
HAMILTON 2.0 48,180
HARDIN 1.8 44,000
GRUNDY 2.1 48,670
TAMA 2.0 42,740
BENTON 2.0 97,160
LINN 1.5 24,720
JONES 2.0 99,200
MONONA 2.0 24,640
CRAWFORD 2.3 101,200
CARROLL 1.5 34,690
GREENE 1.7 42,730
BOONE 1.8 42,960
STORY 1.9 51,600
MARSHALL 1.8 64,500
CEDAR 2.2 101,750
SCOTT 2.1 89,400
HARRISON 1.5 31,680
SHELBY 1.8 65,800
AUDUBON 1.6 51,100
GUTHRIE 2.0 66,820
DALLAS 1.9 53,880
POLK 1.7 45,840
JASPER 1.8 81,600
POWESHIEK 1.7 70,700
IOWA 1.8 89,670
JOHNSON 2.1 107,200
MUSCATINE 2.0 49,000
POTTAWATTAMIE 1.9 84,660
CASS 1.7 68,800
ADAIR 1.6 74,780
MADISON 1.6 62,650
WARREN 1.6 69,400
MARION 2.0 63,240
MAHASKA 1.8 59,700
KEOKUK 2.2 100,800
WASHINGTON 2.2 83,900
LOUISA 1.9 33,900
MILLS 1.3 26,660
MONTGOMERY 1.8 52,400
ADAMS 1.8 58,590
UNION 1.7 58,400
CLARKE 1.2 56,040
LUCAS 1.4 58,000
MONROE 1.3 40,580
WAPELLO 1.9 57,950
JEFFERSON 1.6 53,000
HENRY 1.8 42,260
DES MOINES 1.5 38,310
FREMONT 1.5 31,800
PAGE 1.8 53,740
TAYLOR 1.8 80,400
RINGGOLD 1.7 82,700
DECATUR 1.4 58,200
WAYNE 1.8 115,400
APPANOOSE 1.5 114,370
DAVIS 2.2 93,940
VAN BUREN 1.7 65,700
LEE 1.6 63,000
Total Yield for State
5,838,640 Tons
Average per Acre
1.8 Tons
Farm Value
Dec. 1, 1908
$6.16 per Ton
Total
$35,966,022.00


WILD HAY
1908-Crop
Counties Show Total Yield and Average per Acre
1.5 LYON 16,900
1.1 OSCEOLA 12,800
1.2 DICKINSON 20,120
1.2 EMMET 14,880
1.5 KOSSUTH 83,100
1.2 WINNEBAGO 22,700
1.6 WORTH 22,640
1.2 MITCHELL 3,270
1.2 HOWARD 13,140
1.0 WINNESHIEK 11,920
1.8 ALLAMAKEE 1,690
1.2 SIOUX 23,500
1.7 OBRIEN 18,400
1.5 CLAY 27,790
1.4 PALO ALTO 43,900
1.3 HANCOCK 21,800
1.7 CERRO GORDO 20,300
1.2 FLOYD 7,720
1.2 CHICKASAW 18,990
1.0 FAYETTE 13,370
1.8 CLAYTON 5,600
1.9 PLYMOUTH 46,100
1.3 CHEROKEE 17,238
1.6 BUENA VISTA 30,560
1.5 POCAHONTAS 37,200
1.6 HUMBOLDT 24,400
1.3 WRIGHT 13,500
1.2 FRANKLIN 18,780
1.5 BUTLER 17,325
1.6 BREMER 33,040
1.3 BLACK HAWK 14,390
1.4 BUCHANAN 18,900
1.2 DELAWARE 35,900
1.6 DUBUQUE 3,470
1.8 WOODBURY 28,000
1.4 IDA 4,950
1.5 SAC 19,900
2.0 CALHOUN 37,400
1.6 WEBSTER 48,100
1.5 HAMILTON 29,490
1.4 HARDIN 20,700
1.5 GRUNDY 13,300
1.1 TAMA 4,740
1.7 BENTON 17,000
1.5 LINN 8,650
1.8 JONES 1,500
1.5 JACKSON 2,670
1.8 CLINTON 7,300
2.0 MONONA 32,100
2.0 CRAWFORD 15,100
1.5 CARROLL 20,000
1.1 GREENE 17,100
2.0 BOONE 35,600
1.2 STORY 14,700
1.7 MARSHALL 3,670
1.5 IOWA 1,410
1.9 JOHNSON 3,500
2.0 CEDAR 6,000
1.5 SCOTT 7,500
1.9 MUSCATINE 309
2.0 HARRISON 26,100
1.5 SHELBY 9,670
1.1 AUDUBON 4,290
1.8 GUTHRIE 9,900
1.8 DALLAS 13,932
1.2 POLK 8,250
1.6 JASPER 3,480
1.0 POWESHIEK 2,180
1.0 POTTAWATTAMIE 11,580
1.5 CASS 4,200
1.5 ADAIR 6,630
1.0 MADISON 22,200
1.0 WARREN 1,380
1.7 MARION 1,480
1.5 MAHASKA 1,690
1.8 KEOKUK 450
1.9 WASHINGTON 200
2.0 LOUISA 960
DES MOINES 770
1.3 MILLS 6,200
1.5 MONTGOMERY 1,650
1.6 ADAMS 38,080
1.4 UNION 1,580
1.1 CLARKE 260
1.5 LUCAS 11,700
1.0 MONROE 1,400
1.5 WAPELLO 15
1.6 JEFFERSON 60
1.5 HENRY 60
1.5 FREMONT 6,250
1.5 PAGE 6,300
1.3 TAYLOR 1,880
1.1 RINGGOLD 370
1.2 DECATUR 850
1.0 WAYNE 3,020
1.0 APPANOOSE 2,070
1.8 DAVIS 100
1.5 VAN BUREN 310
1.5 LEE 46,300
Total Yield for State 1,445,980 Tons
Average per Acre 1.6 Tons.
Farm Value Dec. 1, 1908.
$5.09 per Ton
Total $7,360,038.22

PART II.

STATISTICAL TABLES
OF
Iowa's Principal Farm Crops.

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Averrge yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	41	230,633,200	$.25	$57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,559,827

CORN CROPS—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total yield	Acreage
1896	39	312,692,210	$.14	$ 43,916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,660
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	83,432,700	8,700,000
1903	31	230,511,310	.36	82,984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	9,000,000
1905	37.2	345,871,840	.35	121,055,144	9,285,150
1906	41	388,836,252	.33	128,155,143	9,443,960
1907	29.6	246,898,460	.44	108,635,322	8,858,000
1908	35.9	301,873,150	.51	153,955,306	8,399,610
Average	34.6	296,613,106	.32	$ 93,789,060	8,580,377

OATS--1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm vulue per bushel Dec. 1st	Total value	Acreage
1880	35	42,288,800	$.23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total valne	Acreage
1896	26	73,450,000	$.12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,069,557
1900	35	138,832,300	.20	27,766,460	3,991,690
*1901	32	114,883,000	.35	40,209,230	3,799,220
1902	31	92,907,900	.24	22,297,000	3,770,624
†1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177,545
1906	34	142,036,530	.27	38,349,878	4,166,800
1907	24.5	111,190,400	.39	43,364,256	4,536,170
1908	25.5	112,830,490	.43	48,517,110	4,431,650
Average	30.3	120,238,298	$.259	$31,057,108	4,024,237

*Short corn crop.
†Excessive moisture.

WHEAT—1880, 1885, 1900.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre Spring wheat	Average yield per acre Winter wneat	Total yield Spring wheat	Totai yield Winter wheat	Total yield All wheat	Average farm price December 1	Total farm value December 1	Acreage
1880	10.5	------	------------	------------	36,099,760	$.82	$29,501,803	3,437,948
1885	12	------	------------	------------	31,776,108	.61	19,383,426	2,648,009
1890	11.7	------	------------	------------	25,114,552	.78	19,589,350	2,092,896

WHEAT—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Av. yield per acre Spring wheat	Av. yield per acre Winter wheat	Total yield Spring wheat	Total yield Winter wheat	Total yield All wheat	Av. farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1896	13	17	7,047,235	3,351,550	10,398,785	$.57	$ 6,020,000	739,245
1897	13.4	13	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11	19,574,792	226,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,288,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13	18	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,044,809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15	23	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
1907	13	19.8	4,402,320	1,698,101	6,100,421	.82	4,974,302	424,407
1908	15.4	19.7	4,968,250	1,678,540	6,646,790	.86	5,716,239	408,614
Average	13.5	16.2	11,213,175	1,521,148	12,745,401	$.67	$ 8,004,705	929,944

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acrea
1880	23	4,600,000	$.42	$1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1896	29	15,881,618	$.20	$3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,589
1899	25.6	14,719,310	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
1907	24.6	9,893,330	.60	5,935,998	397,210
1908	26.7	10,629,660	.50	5,314,830	397,408
Average	25.9	13,614,799	$.356	$4,706,456	520,983

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	14	574,000	$.38	$218,120	41,000
1885	15	1,710,000	.42	718,200	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield yer acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1896	16	1,891,716	$.25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	824,460	126,236
1900	15.6	1,621,130	.43	697,300	103,680
1901	15.8	859,630	.48	859,630	54,390
1902	17	882,830	.40	353,132	55,150
1903	15.6	1,923,060	.44	846,146	123,273
1904	15	1,517,090	.54	819,228	99,590
1905	18	1,283,500	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
1907	17	900,060	.61	549,036	52,975
1908	17.1	869,072	.63	547,515	50,893
Average	16.3	1,674,100	$ .454	$ 741,444	104,477

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield Tame hay	Total yield Tons	Average yield Wild hay	Total yield Tons	Total yield all hay Tons	Average value per ton Tame hay	Average value per ton Wild hay	Total value all hay	Acreage
*1880	-----	----------	-----	----------	----------	-----	-----	----------	----------
*1885	-----	----------	-----	----------	----------	-----	-----	----------	----------
1890	1.5	4,991,335	-----	----------	----------	$6.84	-----	$34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1908

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Tame Hay		Wild Hay		Total yield all hay Tons	Av. value per ton Tame hay	Av. value per ton Wild hay	Total value all hay	Acreage
	Average yield	Total yield Tons	Average yield	Total yield Tons					
1896	1.5	3,376,440	1.5	2,325,000	5,701,440	$4.50	$3.30	$22,782,000	3,800,960
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4.50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,967
1899	1.5	3,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,960
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,391,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,894
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5,62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,600
1907	1.5	5,117,878	1.3	1,172,590	6,290,468	8.50	6.75	51,316,945	4,268,730
1908	1.8	5,838,640	1.6	1,445,980	7,284,620	6.16	5.09	43,326,060	4,146,870
Average	1.6	4,480,478	1.27	1,438,064	5,918,539	$6.12	$4.88	$34,492,985	3,917,668

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Av. yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1880	10	1,034,200	$1.00	$1,034,200	103,420
*1885			.94	2,503,293	
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Av. yield per acre	Total yield	Av. farm value per bushel Dec. 1st	Total value	Acreage
1896	9.5	1,946,720	$ .95	$1,135,000	199,128
1897	10	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
1907	10.8	461,960	.98	408,640	42,790
1908	11.3	461,580	1.01	466,195	40,833
Average	10.9	1,043,371	$1.02	$ 964,371	102,820

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total valve	Acreage
1880	95	10,165,000	$.35	$3,557,750	107,000
1885	82	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1908.

Statistics compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	87	14,814,795	$.21	$2,962,950	170,285
1897	60	10,051,910	.45	4,523,360	163,248
1898	76	12,538,410	.31	3,826,900	164,456
1899	98	15,252,934	.24	3,660,714	154,243
1900	78	10,850,900	.40	4,340,360	149,680
*1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91	12,051,670	.34	4,095,650	138,484
†1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125	14,255,680	.28	3,991,590	113,250
1905	84	9,352,190	.50	4,676,045	111,335
1906	101	11,697,500	.48	5,614,800	115,310
1907	84	9,847,430	.62	6,105,406	117,350
1908	89.9	10,658,290	.59	6,288,391	118,517
Average	82	10,965,605	$.47	$4,556,676	135,838

*Very dry.
†Very wet.

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Figures taken from the December, 1908, Supplement of the Crop
And the Iowa Weather and Crop

Acreage, production and value of corn in the United States in 1908, by states.

Number	State or Territory	CORN				
		Acreage	Yield per Acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1
1	Maine	14,000	40.5	567,000	$ .84	$ 476,000
2	New Hampshire	28,000	39.0	1,092,000	.79	863,000
3	Vermont	62,000	40.3	2,499,000	.78	1,949,000
4	Massachusetts	45,000	40.4	1,818,000	.81	1,473,000
5	Rhode Island	10,000	42.8	428,000	.90	385,000
6	Connecticut	58,000	41.3	2,395,000	.80	1,916,000
7	New York	625,000	38.8	24,250,000	.80	19,400,000
8	New Jersey	278,000	38.0	10,564,000	.69	7,289,000
9	Pennsylvania	1,450,000	39.5	57,275,000	.73	41,811,000
10	Delaware	195,000	32.0	6,240,000	.59	3,682,000
11	Maryland	675,000	36.6	24,705,000	.62	15,317,000
12	Virginia	1,925,000	26.0	50,050,000	.71	35,536,000
13	West Virginia	768,000	31.2	23,962,000	.77	18,451,000
14	North Carolina	2,787,000	18.0	50,166,000	.79	39,631,000
15	South Carolina	2,073,000	14.1	29,229,000	.91	26,598,000
16	Georgia	4,300,000	12.5	53,750,000	.82	44,075,000
17	Florida	627,000	10.5	6,584,000	.82	5,390,000
18	Ohio	3,550,000	38.5	136,675,000	.63	86,105,000
19	Indiana	4,549,000	30.3	137,835,000	.60	82,701,000
20	Illinois	9,450,000	31.6	298,620,000	.57	170,213,000
21	Michigan	1,900,000	31.8	60,420,000	.64	38,669,000
22	Wisconsin	1,474,000	33.7	49,674,000	.61	30,301,000
23	Minnesota	1,615,000	29.0	46,835,000	.55	25,759,000
24	Iowa	8,399,610	35.9	301,873,150	.51	153,955,306
25	Missouri	7,542,000	27.0	203,634,000	.57	116,071,000
26	North Dakota	162,000	23.8	3,856,000	.60	2,314,000
27	South Dakota	1,942,000	29.7	57,677,000	.50	28,838,000
28	Nebraska	7,621,000	27.0	205,767,000	.51	104,941,000
29	Kansas	7,100,000	22.0	156,200,000	.55	85,910,000
30	Kentucky	3,366,000	25.2	84,823,000	.65	55,135,000
31	Tennessee	3,350,000	24.8	83,080,000	.64	53,171,000
32	Alabama	3,050,000	14.7	44,835,000	.83	37,213,000
33	Mississippi	2,650,000	17.3	45,845,000	.83	38,051,000
34	Louisiana	1,712,000	19.8	33,898,000	.70	23,729,000
35	Texas	7,854,000	25.7	201,848,000	.59	119,090,000
36	Oklahoma	4,929,000	24.8	122,239,000	.51	62,342,000
37	Arkansas	2,675,000	20.2	54,035,000	.66	35,663,000
38	Montana	4,000	23.4	94,000	.90	85,000
39	Wyoming	3,000	28.0	84,000	.76	64,000
40	Colorado	128,000	20.2	2,586,000	.71	1,836,000
41	New Mexico	65,000	27.0	1,755,000	.80	1,404,000
42	Arizona	13,000	33.2	432,000	1.05	454,000
43	Utah	11,000	29.4	323,000	.72	233,000
44	Nevada	-------------	-------	-------------	------	-------------
45	Idaho	6,000	29.0	174,000	.70	122,000
46	Washington	13,000	25.5	332,000	.76	252,000
47	Oregon	16,000	27.8	445,000	.77	343,000
48	California	50,000	32.0	1,600,000	.88	1,408,000
	United States	101,788,000	26.2	2,668,651,000	$ .606	$1,616,145,000

PAL FARM CROPS OF THE UNITED STATES IN 1908.

Reporter issued by the United States Department of Agriculture
Service Reporter for November, 1908.

Acreage, production and value of wheat in the United States in 1908, by states.

WINTER WHEAT					SPRING WHEAT					
Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1	Number
----------	------	----------	------	----------	8,000	23.5	188,000	$1.04	$ 196,000	1
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----------	------	----------	------	----------	1,000	23.0	23,000	.99	23,000	3
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443,000	17.5	7,752,000	$ .99	$ 7,674,000	----------	------	----------	------	----------	7
108,000	17.3	1,868,000	1.01	1,887,000	----------	------	----------	------	----------	8
1,590,000	18.5	29,415,000	.99	29,121,000	----------	------	----------	------	----------	9
115,000	15.0	1,725,000	1.00	1,725,000	----------	------	----------	------	----------	10
765,000	16.4	12,546,000	.98	12,295,000	----------	------	----------	------	----------	11
780,000	11.4	8,892,000	1.01	8,981,000	----------	------	----------	------	----------	12
361,000	13.0	4,693,000	1.03	4,834,000	----------	------	----------	------	----------	13
568,000	10.0	5,680,000	1.07	6,078,000	----------	------	----------	------	----------	14
315,000	9.0	2,835,000	1.30	3,686,000	----------	------	----------	------	----------	15
240,000	9.2	2,208,000	1.21	2,672,000	----------	------	----------	------	----------	16
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2,083,000	16.0	33,328,000	.99	32,995,000	----------	------	----------	------	----------	18
2,721,000	16.6	45,169,000	.98	44,266,000	----------	------	----------	------	----------	19
2,324,000	13.0	30,212,000	.97	29,306,000	----------	------	----------	------	----------	20
874,000	18.0	15,732,000	.97	15,260,000	----------	------	----------	------	----------	21
63,000	19.5	1,228,000	.92	1,130,000	120,000	17.5	2,100,000	.92	1,932,000	22
----------	------	----------	------	----------	5,356,000	12.3	68,557,000	.94	64,444,000	23
85,187	19.7	1,678,540	.86	1,443,544	323,467	15.4	4,968,250	.86	4,272,695	24
2,226,000	10.0	22,260,000	.93	20,702,000	----------	------	----------	------	----------	25
----------	------	----------	------	----------	5,899,000	11.6	68,428,000	.92	62,954,000	26
----------	------	----------	------	----------	2,958,000	12.8	37,862,000	.92	34,833,000	27
2,265,000	17.8	40,317,000	.84	33,866,000	306,000	13.0	3,978,000	.84	3,342,000	28
6,108,000	12.8	78,182,000	.88	68,800,000	200,000	5.5	1,100,000	.88	968,000	29
758,000	11.6	8,793,000	.98	8,617,000	----------	------	----------	------	----------	30
819,000	10.0	8,190,000	.99	8,108,000	----------	------	----------	------	----------	31
95,000	11.5	1,092,000	1.07	1,168,000	----------	------	----------	------	----------	32
1,000	14.5	14,000	1.03	14,000	----------	------	----------	------	----------	33
----------	------	----------	------	----------	----------	------	----------	------	----------	34
924,000	11.0	10,164,000	.98	9,961,000	----------	------	----------	------	----------	35
1,347,000	11.6	15,625,000	.88	13,750,000	----------	------	----------	------	----------	36
162,000	10.0	1,620,000	.95	1,539,000	----------	------	----------	------	----------	37
----------	------	----------	------	----------	153,000	24.2	3,703,000	.86	3,185,000	38
20,000	25.0	500,000	.85	425,000	50,000	25.5	1,275,000	.85	1,084,000	39
----------	------	----------	------	----------	293,000	21.0	6,153,000	.88	5,415,000	40
----------	------	----------	------	----------	41,000	25.0	1,025,000	.94	964,000	41
----------	------	----------	------	----------	15,000	26.7	400,000	1.20	480,000	42
50,000	23.0	1,150,000	.85	978,000	170,000	27.5	4,675,000	.85	3,974,000	43
----------	------	----------	------	----------	33,000	30.0	990,000	1.13	1,119,000	44
232,000	30.0	6,960,000	.74	5,150,000	155,000	25.4	3,937,000	.74	2,913,000	45
576,000	24.5	14,112,000	.82	11,572,000	870,000	15.0	13,050,000	.82	10,701,000	46
468,000	23.2	10,858,000	.84	9,121,000	260,000	16.5	4,290,000	.84	3,604,000	47
800,000	14.6	11,680,000	1.02	11,914,000	----------	------	----------	------	----------	48
30,349,000	14.4	437,908,000	$ .93.7	$410,330,000	17,208,000	13.2	226,694,000	$ .911	$206,496,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Number	State or Territory	OATS				
		Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1
1	Maine	119,000	34.0	4,046,000	$ .60	$ 2,428,000
2	New Hampshire	13,000	30.6	398,000	.59	235,000
3	Vermont	80,000	33.3	2,664,000	.62	1,652,000
4	Massachusetts	7,000	33.0	231,000	.62	143,000
5	Rhode Island	2,000	31.0	62,000	.64	40,000
6	Connecticut	11,000	32.6	359,000	.58	208,000
7	New York	1,250,000	30.1	37,625,000	.56	21,070,000
8	New Jersey	60,000	30.7	1,842,000	.55	1,013,000
9	Pennsylvania	1,003,000	27.3	27,382,000	.55	15,060,000
10	Delaware	4,000	29.8	119,000	.54	64,000
11	Maryland	30,000	25.5	765,000	.53	405,000
12	Virginia	200,000	19.1	3,820,000	.55	2,101,000
13	West Virginia	95,000	19.0	1,805,000	.56	1,011,000
14	North Carolina	200,000	16.5	3,300,000	.63	2,079,000
15	South Carolina	201,000	20.0	4,020,000	.75	3,015,000
16	Georgia	300,000	17.2	5,160,000	.72	3,715,000
17	Florida	30,000	14.5	435,000	.72	313,000
18	Ohio	1,460,000	26.4	38,544,000	.49	18,887,000
19	Indiana	1,671,000	21.2	35,425,000	.47	16,650,000
20	Illinois	4,100,000	23.0	94,300,000	.47	44,321,000
21	Michigan	1,409,000	29.7	41,847,000	.49	20,505,000
22	Wisconsin	2,350,000	31.1	73,085,000	.47	34,350,000
23	Minnesota	2,682,000	22.0	59,004,000	.43	25,372,000
24	Iowa	4,431,650	25.5	112,830,490	.43	48,517,110
25	Missouri	700,000	19.3	13,510,000	.45	6,080,000
26	North Dakota	1,399,000	23.4	32,737,000	.42	13,750,000
27	South Dakota	1,365,000	23.0	31,395,000	.41	12,872,000
28	Nebraska	2,549,000	22.0	56,078,000	.41	22,992,000
29	Kansas	994,000	22.0	21,868,000	.45	9,841,000
30	Kentucky	173,000	16.2	2,803,000	.54	1,514,000
31	Tennessee	175,000	21.0	3,675,000	.53	1,948,000
32	Alabama	235,000	18.0	4,230,000	.66	2,792,000
33	Mississippi	125,000	17.5	2,188,000	.67	1,466,000
34	Louisiana	30,000	20.0	600,000	.64	384,000
35	Texas	750,000	28.9	21,675,000	.52	11,271,000
36	Oklahoma	450,000	25.0	11,250,000	.45	5,062,000
37	Arkansas	173,000	21.4	3,702,000	.53	1,962,000
38	Montana	254,000	41.6	10,566,000	.49	5,177,000
39	Wyoming	78,000	36.4	2,839,000	.50	1,420,000
40	Colorado	178,000	39.5	7,031,000	.54	3,797,000
41	New Mexico	24,000	33.5	804,000	.64	515,000
42	Arizona	4,000	36.0	144,000	.74	107,000
43	Utah	53,000	49.5	2,624,000	.48	1,260,000
44	Nevada	7,000	45.0	315,000	.65	205,000
45	Idaho	127,000	44.0	5,588,000	.47	2,626,000
46	Washington	194,000	44.5	8,633,000	.48	4,144,000
47	Oregon	285,000	33.4	9,519,000	.47	4,474,000
48	California	200,000	33.5	6,700,000	.67	4,489,000
	United States	32,344,000	25.0	807,156,000	$ .472	$ 381,171,000

PAL FARM CROPS OF THE UNITED STATES IN 1908.

BARLEY					RYE					
Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1	Number
8,000	28.0	224,000	$ .81	$ 181,000	----------	------	----------	------	----------	1
2,000	24.0	48,000	.80	38,000	----------	------	----------	------	----------	2
14,000	33.0	462,000	.70	323,000	2,000	15.0	30,000	$ .90	$ 27,000	3
----------	------	----------	------	----------	4,000	16.5	66,000	.95	63,000	4
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----------	------	----------	------	----------	10,000	18.5	185,000	.90	166,000	6
77,000	26.0	2,002,000	.70	1,401,000	145,000	16.5	2,392,000	.81	1,938,000	7
----------	------	----------	------	----------	78,000	16.2	1,264,000	.81	1,024,000	8
9,000	26.0	234,000	.63	147,000	343,000	16.5	5,660,000	.77	4,358,000	9
----------	------	----------	------	----------	1,000	15.5	16,000	.82	13,000	10
1,000	30.0	30,000	.65	20,000	19,000	15.0	285,000	.77	219,000	11
3,000	28.0	84,000	.69	58,000	15,000	12.5	188,000	.82	154,000	12
----------	------	----------	------	----------	10,000	13.0	130,000	.85	110,000	13
----------	------	----------	------	----------	14,000	8.9	125,000	.98	122,000	14
----------	------	----------	------	----------	4,000	9.6	38,000	1.37	52,000	15
----------	------	----------	------	----------	14,000	8.7	122,000	1.25	152,000	16
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30,000	27.5	825,000	.64	528,000	49,000	16.5	808,000	.76	614,000	18
9,000	23.0	207,000	.65	135,000	63,000	15.0	945,000	.74	699,000	19
30,000	28.5	855,000	.65	556,000	71,000	17.1	1,214,000	.73	886,000	20
70,000	25.5	1,785,000	.62	1,107,000	368,000	15.5	5,704,000	.71	4,050,000	21
825,000	30.0	24,750,000	.58	14,355,000	275,000	19.0	5,225,000	.71	3,710,000	22
1,300,000	25.0	32,500,000	.49	15,925,000	88,000	18.5	1,628,000	.63	1,026,000	23
397,408	26.7	10,629,660	.50	5,314,830	50,893	17.1	869,072	.63	547,515	24
2,000	23.0	46,000	.63	29,000	15,000	12.8	192,000	.76	146,000	25
940,000	19.5	18,330,000	.46	8,432,000	24,000	18.0	432,000	.65	281,000	26
928,000	26.5	24,592,000	.47	11,558,000	32,000	17.5	560,000	.59	330,000	27
118,000	23.5	2,773,000	.46	1,276,000	85,000	16.0	1,360,000	.60	816,000	28
275,000	16.0	4,400,000	.54	2,376,000	45,000	13.3	598,000	.71	425,000	29
1,000	25.0	25,000	.72	18,000	13,000	13.5	176,000	.85	150,000	30
1,000	25.0	25,000	.73	18,000	8,000	12.5	100,000	.90	90,000	31
----------	------	----------	------	----------	2,000	10.0	20,000	1.23	25,000	32
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4,000	24.0	96,000	.78	75,000	4,000	15.5	62,000	.98	61,000	35
30,000	23.0	690,000	.58	400,000	3,000	13.5	40,000	.80	32,000	36
----------	------	----------	------	----------	2,000	10.0	20,000	.94	19,000	37
25,000	35.0	875,000	.61	534,000	2,000	20.0	40,000	.68	27,000	38
4,000	35.0	140,000	.65	91,000	1,000	22.0	22,000	.70	16,000	39
24,000	33.0	792,000	.65	515,000	3,000	15.5	46,000	.70	32,000	40
1,000	42.0	42,000	.79	33,000	----------	------	----------	------	----------	41
29,000	38.0	1,102,000	.85	937,000	----------	------	----------	------	----------	42
12,000	45.0	540,000	.54	292,000	3,000	15.5	46,000	.65	30,000	43
8,000	30.0	240,000	.77	185,000	----------	------	----------	------	----------	44
52,000	41.0	2,132,000	.53	1,130,000	2,000	20.0	40,000	.68	27,000	45
170,000	30.5	5,185,000	.58	3,007,000	3,000	19.5	58,000	.90	52,000	46
62,000	29.0	1,798,000	.59	1,061,000	9,000	18.0	162,000	.85	138,000	47
1,082,000	23.5	25,427,000	.74	18,816,000	66,000	12.0	792,000	.88	697,000	48
6,646,000	25.1	166,756,000	$ 55.4	$ 92,442,000	1,948,000	16.4	31,851,000	$ .736	$ 23,455,000	

ACREAGE, PRODUCTION AND VALUE OF THE PRINCI

Number	Ttate or Territory	POTATOES				
		Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1
1	Maine	116,000	225	26,100,000	$ .61	$ 15,921,000
2	New Hampshire	19,000	100	1,900,000	.73	1,387,000
3	Vermont	27,000	73	1,971,000	.67	1,321,000
4	Massachusetts	32,000	95	3,040,000	.85	2,584,000
5	Rhode Island	6,000	150	900,000	.86	774,000
6	Connecticut	34,000	80	2,720,000	.90	2,448,000
7	New York	425,000	82	34,850,000	.75	26,138,000
8	New Jersey	73,000	72	5,256,000	.89	4,678,000
9	Pennsylvania	277,000	72	19,944,000	.80	15,955,000
10	Delaware	8,000	82	656,000	.83	544,000
11	Maryland	32,000	77	2,464,000	.74	1,823,000
12	Virginia	57,000	88	5,016,000	.72	3,612,000
13	West Virginia	34,000	84	2,856,000	.85	2,428,000
14	North Carolina	25,000	79	1,975,000	.77	1,521,000
15	South Carolina	9,000	81	729,000	1.10	802,000
16	Georgia	10,000	78	780,000	1,10	858,000
17	Florida	5,000	83	415,000	1.35	560,000
18	Ohio	170,000	77	13,090,000	.77	10,079,000
19	Indiana	90,000	57	5,130,000	.84	4,309,000
20	Illinois	156,000	71	11,076,000	.83	9,193,000
21	Michigan	325,000	72	23,400,000	.58	13,572,000
22	Wisconsin	252,000	80	20,160,000	.60	12,096,000
23	Minnesota	145,000	76	11,020,000	.56	6,171,000
24	Iowa	118,517	89.9	10,658,290	.59	6,288,391
25	Missouri	85,000	80	6,800,000	.74	5,032,000
26	North Dakota	30,000	85	2,550,000	.56	1,428,000
27	South Dakota	45,000	90	4,050,000	.51	2,066,000
28	Nebraska	91,000	78	7,098,000	.55	3,904,000
29	Kansas	86,000	80	6,880,000	.83	5,710,000
30	Kentucky	38,000	62	2,356,000	.81	1,908,000
31	Tennessee	28,000	80	2,240,000	.71	1,590,000
32	Alabama	15,000	85	1,275,000	.95	1,211,000
33	Mississippi	8,000	91	728,000	.93	677,000
34	Louisiana	13,000	82	1,066,000	.92	981,000
35	Texas	50,000	71	3,550,000	.98	3,479,000
36	Oklahoma	27,000	78	2,106,000	.98	2,064,000
37	Arkansas	30,000	82	2,460,000	.86	2,116,000
38	Montana	20,000	138	2,760,000	.70	1,932,000
39	Wyoming	6,000	158	948,000	.66	626,000
40	Colorado	56,000	125	7,000,000	.60	4,200,000
41	New Mexico	1,000	100	100,000	.90	90,000
42	Arizona	----------	------	----------	----	----------
43	Utah	12,000	160	1,920,000	.55	1,056,000
44	Nevada	3,000	120	360,000	.75	270,000
45	Idaho	15,000	130	1,950,000	.60	1,170,000
46	Washington	38,000	120	4,560,000	.67	3,055,000
47	Oregon	43,000	99	4,257,000	.68	2,895,000
48	California	49,000	107	5,243,000	.77	4,037,000
	United States	3,257,000	85.7	278,985,000	$ .706	$ 197,039,000

PAL FARM CROPS OF THE UNITED STATES IN 1908.

BUCKWHEAT					FLAXSEED					
Acreage	Yield per acre	Prodnction	Price per bush. Dec. 1	Total farm value Dec. 1	Acreage	Yield per acre	Production	Price per bush. Dec. 1	Total farm value Dec. 1	Number
23,000	30.0	690,000	$ .75	$ 518,000	----------	------	-----------	------	------------	1
2,000	21.5	43,000	.80	34,000	----------	------	-----------	------	------------	2
8,000	22.0	176,000	.70	123,000	----------	------	-----------	------	------------	3
2,000	18.0	36,000	.80	29,000	----------	------	-----------	------	------------	4
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3,000	18.2	55,000	.80	44,000	----------	------	-----------	------	------------	6
319,000	21.4	6,827,000	.76	5,189,000	----------	------	-----------	------	------------	7
12,000	20.0	240,000	.75	180,000	----------	------	-----------	------	------------	8
260,000	19.2	4,992,000	.75	3,744,000	----------	------	-----------	------	------------	9
1,000	30.0	30,000	.72	22,000	----------	------	-----------	------	------------	10
9,000	18.5	166,000	.76	126,000	----------	------	-----------	------	------------	11
20,000	18.0	360,000	.72	259,000	----------	------	-----------	------	------------	12
21,000	18.0	378,000	.81	306,000	----------	------	-----------	------	------------	13
5,000	16.4	82,000	.78	64,000	----------	------	-----------	------	------------	14
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13,000	18.5	240,000	.82	197,000	----------	------	-----------	------	------------	18
7,000	17.0	119,000	.78	93,000	----------	------	-----------	------	------------	19
5,000	18.2	91,000	.90	82,000	----------	------	-----------	------	------------	20
55,000	13.5	742,000	.71	527,000	----------	------	-----------	------	------------	21
20,000	15.2	304,000	.76	231,000	25,000	16.0	400,000	1.15	460,000	22
5,000	18.2	91,000	.73	66,000	427,000	10.6	4,526,000	1.20	5,431,000	23
9,000	15.5	140,000	.78	109,000	40,833	11.3	461,580	1.01	466,195	24
1,000	20.1	20,000	.85	17,000	26,000	7.0	182,000	1.03	187,000	25
----------	------	-----------	------	------------	1,530,000	9.0	13,770,000	1.19	16,386,000	26
----------	------	-----------	------	------------	550,000	10.7	5,885,000	1.19	7,003,000	27
1,000	18.0	18,000	.83	15,000	15,000	11.0	165,000	1.12	185,000	28
1,000	18.7	19,000	.91	17,000	58,000	6.5	377,000	1.02	385,000	29
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1,000	15.3	15,000	.80	12,000	----------	------	-----------	------	------------	31
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----------	------	-----------	------	------------	6,000	6.0	36,000	1.10	40,000	36
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----------	------	-----------	------	------------	9,000	11.5	104,000	1.00	104,000	38
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803,000	19.8	15,874,000	$ .756	$ 12,004,000	2,679,000	9.6	25,805,000	$1.184	$ 30,577,000	

ACREAGE, PRODUCTION AND VALUE OF HAY IN THE UNITED STATES FOR 1908, BY STATES.

State or Territory	HAY				
	Acreage	Yield per acre	Production	Price per ton Dec. 1	Total farm value Dec. 1
Maine	1,400,000	.90	1,260,000	$14.00	$ 17,640,000
New Hampshire	640,000	.92	589,000	16.00	9,424,000
Vermont	870,000	1.11	966,000	13.50	13,041,000
Massachusetts	585,000	1.20	702,000	17.00	11,934,000
Rhode Island	60,000	1.50	90,000	17.25	1,552,000
Connecticut	490,000	1.20	588,000	15.75	9,261.000
New York	4,764,000	1.20	5,717,000	12.25	70,033,000
New Jersey	437,000	1.60	699,000	14.00	9,786,000
Pennsylvania	3,118,000	1.50	4,677,000	12.00	56,124,000
Delaware	78,000	1.60	125,000	12.50	1,562,000
Maryland	300,000	1.60	480,000	12.00	5,760,000
Virginia	475,000	1.30	618,000	12.25	7,570,000
West Virginia	620,000	1.45	899,000	11.00	9,889,000
North Carolina	175,000	1.50	262,000	13.50	3,537,000
South Carolina	65,000	1.25	81,000	14.80	1,199,000
Georgia	87,000	1.75	152,000	14.35	2,181,000
Florida	19,000	1.35	26,000	14.80	385,000
Ohio	3,000,000	1.53	4,590,000	8.70	39,933,000
Indiana	2,500,000	1.50	3,750,000	8.80	33,000,000
Illinois	3,100,000	1.53	4,743,000	8.20	38,893,000
Michigan	2,727,000	1.45	3,954,000	8.75	34,598,000
Wisconsin	2,346,000	1.70	3,988,000	8.00	31,904,000
Minnesota	909,000	1.68	1,527,000	5.40	8,246,000
Iowa	3,800,000	1.70	6,460,000	5.70	36,822,000
Missouri	2,900,000	1.50	4,350,000	7.00	30,450,000
North Dakota	187,000	1.30	243,000	4.80	1,166,000
South Dakota	510,000	1.50	765,000	4.10	3,136,000
Nebraska	1,515,000	1.55	2,348,000	4.90	11,505,000
Kansas	1,829,000	1.50	2,744,000	5.70	15,641,000
Kentucky	500,000	1.35	675,000	11.00	7,425,000
Tennessee	400,000	1.50	600,000	11.80	7,080,000
Alabama	110,000	1.50	176,000	12.50	2,200,000
Mississippi	81,000	1.50	122,000	11.00	1,342,000
Louisiana	22,000	1.40	31,000	11.00	341,000
Texas	650,000	1.65	1,072,000	8.25	8,844,000
Oklahoma	900,000	1.45	1,305,000	5.00	6,525,000
Alabama	110,000	1.60	176,000	12.50	2,200,000
Montana	525,000	2.00	1,050,000	8.35	8,768,000
Wyoming	252,000	2.00	504,000	7.40	3,730,000
Colorado	670,000	2.50	1,675,000	8.75	14,656,000
New Mexico	168,000	2.00	336,000	9.50	3,192,000
Arizona	103,000	3.20	330,000	12.20	4,026,000
Utah	375,000	2.50	938,000	7.40	6,941,000
Nevada	200,000	2.00	400,000	8.80	3,520,000
Idaho	434,000	3.25	1,410,000	7.10	10,011,000
Washington	373,000	2.25	839,000	11.00	9,229,000
Oregon	414,000	2.00	828,000	9.30	7,700,000
California	605,000	1.35	817,000	13.25	10,825,000
United States	46,486,000	1.52	70,798,000	$ 8.98	$635,423,000

STATISTICS OF THE PRINCIPAL CROPS.

(Figures furnished by the Bureau of Statistics, Department of Agriculture, except where otherwise credited. All prices on gold basis.)

CORN.

Corn crop of countries named. 1902-1906.

Country.	1902 Bushels.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.
NORTH AMERICA.					
United States	2,523,648,000	2,244,177,000	2,467,481,000	2,707,994,000	2,927,416,000
Canada (Ontario)*	21,159,000	30,211,000	20,880,000	21,582,000	24,745,000
Mexico	78,099,000	90,879,000	88,131,000	85,000,000	70,000,000
Total North America	2,622,906,000	2,365,267,000	2,576,492,000	2,814,576,000	3,022,161,000
SOUTH AMERICA.					
Argentina	84,018,000	148,948,000	175,189,000	140,708,000	194,912,000
Chile	866,000	1,118,000	1,477,000	1,244,000	846,000
Uruguay	5,060,000	5,289,000	3,035,000	4,417,000	3,226,000
Total South America	89,944,000	155,355,000	179,701,000	146,369,000	198,984,000
EUROPE.					
Austria-Hungary:					
Austria	13,462,000	16,056,000	12,529,000	17,293,000	18,177,000
Hungary proper	104,546,000	135,751,000	59,400,000	94,045,000	162,923,000
Croatia-Slavonia	15,255,000	23,776,000	11,364,000	18,385,000	25,600,000
Bosnia-Herzegovina	5,863,000	8,411,000	6,464,000	9,584,000	8,936,000
Total Austria-Hungary	139,126,000	183,994,000	89,757,000	139,307,000	215,636,000
Bulgaria	18,100,000	22,836,000	12,758,000	19,649,000	20,000,000
France	24,928,000	25,360,000	19,482,000	24,030,000	14,581,000
Italy	71,028,000	88,990,000	90,545,000	97,265,000	93,007,000
Portugal	16,000,000	14,000,000	15,000,000	16,000,000	16,000,000
Roumania	68,447,000	80,272,000	19,598,000	59,275,000	130,546,000
Russia:					
Russia proper	40,377,000	40,397,000	18,956,000	22,533,000	59,320,000
Poland	------------	------------	13,000	------------	------------
Northern Caucasia	8,042,000	10,067,000	6,951,000	10,798,000	11,181,000
Total Russia (European)	48,419,000	50,464,000	25,920,000	33,331,000	70,501,000
Servia	18,396,000	19,479,000	9,498,000	21,431,000	27,786,000
Spain	25,272,000	18,759,000	21,300,000	31,880,000	30,000,000
Total Europe	429,716,000	504,154,000	303,858,000	442,168,000	618,057,000
AFRICA.					
Algeria	556,000	435,000	391,000	490,000	400,000
Cape of Good Hope	2,000,000	3,502,000	3,000,000	3,000,000	3,000,000
Egypt	30,000,000	30,000,000	30,000,000	30,000,000	30,000,000
Natal	4,143,000	1,997,000	5,282,000	3,845,000	4,000,000
Sudan (Anglo-Egyptian)	200,000	184,000	189,000	320,000	300,000
Total Africa	36,899,000	36,118,000	38,862,000	37,655,000	37,700,000
AUSTRALASIA.					
Australia:					
Queensland	2,650,000	1,066,000	1,984,000	2,623,000	2,233,000

CORN—CONTINUED.

Country.	1902 Bushels.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.
New South Wales	3,966,000	3,145,000	7,052,000	5,107,000	5,714,000
Victoria	635,000	774,000	933,000	643,000	661,000
Western Australia	5,000	2,000	3,000	1,000	------------
Total Australia	7,256,000	4,987,000	9,972,000	8,374,000	8,608,000
New Zealand	590,000	627,000	547,000	506,000	653,000
Total Australasia	7,846,000	5,614,000	10,519,000	8,880,000	9,261,000
Grand total	3,187,311,000	3,066,508,000	3,109,432,000	3,449,648,000	3,886,163,000

*Officially reported as "Corn in the ear."

WHEAT.

Wheat crop of countries named, 1903-1907.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
NORTH AMERICA.					
United States	637,822,000	552,400,000	692,979,000	735,261,000	634,087,000
Canada:					
New Brunswick	471,000	371,000	418,000	420,000	424,000
Ontario	22,583,000	13,030,000	22,195,000	22,806,000	18,587,000
Manitoba	41,381,000	40,397,000	57,519,000	63,181,000	40,939,000
Saskatchewan	15,598,000	16,447,000	26,930,000	38,207,000	28,564,000
Alberta	1,238,000	968,000	2,379,000	4,001,000	4,092,000
Other	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Total Canada	85,271,000	75,213,000	113,441,000	132,705,000	96,606,000
Mexico	10,493,000	9,393,000	7,000,000	7,000,000	10,000,000
Total North America	733,586,000	637,006,000	813,420,000	874,966,000	740,693,000
SOUTH AMERICA.					
Argentina	103,759,000	129,672,000	150,745,000	134,931,000	155,993,000
Chile	10,114,000	17,948,000	12,089,000	12,157,000	15,776,000
Uruguay	5,240,000	7,565,000	7,000,000	4,606,000	6,867,000
Total South America	119,113,000	155,185,000	169,834,000	151,694,000	178,636,000
EUROPE.					
Austria-Hungary:					
Austria	46,198,000	53,734,000	54,531,000	58,255,000	52,069,000
Hungary proper	161,958,000	137,078,000	157,514,000	197,408,000	120,508,000
Croatia-Slavonia	14,661,000	9,841,000	13,077,000	10,314,000	10,200,000
Bosnia-Herzegovina	3,901,000	3,753,000	3,016,000	2,698,000	2,282,000
Total Austria-Hungary	226,721,000	204,406,000	228,138,000	268,675,000	185,059,000
Belgium	12,350,000	13,817,000	12,401,000	12,964,000	12,000,000
Bulgaria	35,551,000	42,242,000	40,736,000	55,076,000	30,000,000
Denmark	4,461,000	4,302,000	4,083,000	4,161,000	4,000,000
Finland	130,000	133,000	129,000	100,000	100,000
France	364,320,000	298,826,000	335,453,000	324,919,000	369,970,000
Germany	130,626,000	139,803,000	135,947,000	144,754,000	127,843,000
Greece	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Italy	184,451,000	167,635,000	160,504,000	176,464,000	177,543,000
Montenegro	200,000	200,000	200,000	200,000	200,000
Netherlands	4,258,000	4,423,000	5,109,000	4,978,000	5,000,000
Norway	307,000	212,000	329,000	303,000	200,000
Portugal	8,000,000	9,000,000	5,000,000	9,000,000	6,000,000
Roumania	73,700,000	53,738,000	103,328,000	113,867.000	42,237,000

WHEAT—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
Russia:					
Russia proper	454,596,000	519,964,000	451,327,000	344,765,000	------------
Poland	19,255,000	21,241,000	20,239,000	21,152,000	------------
Northern Caucasia	77,877,000	81,050,000	96,708,000	85,046,000	------------
Total Russia (European)	551,728,000	622,255,000	568,274,000	450,963,000	455,000,000
Servia	10,885,000	11,676,000	11,280,000	13,211,000	8,375,000
Spain	128,979,000	95,377,000	92,504,000	140,656,000	100,331,000
Sweden	5,538,000	5,135,000	5,529,000	6,650,000	5,953,000
Switzerland	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Turkey (European)	26,000,000	23,000,000	20,000,000	25,000,000	16,000,000
United Kingdom:					
Great Britain—					
England	46,524,000	35,624,000	57,424,000	57,583,000	53,860,000
Scotland	1,528,000	1,499,000	2,130,000	2,063,000	1,951,000
Wales	1,093,000	919,000	1,204,000	1,308,000	1,139,000
Ireland	1,176,000	1,040,000	1,430,000	1,527,000	1,325,000
Total United Kingdom	50,321,000	39,082,000	62,188,000	62,481,000	58,275,000
Total Europe	1,830,526,000	1,747,262,000	1,803,132,000	1,826,422,000	1,616,086,000
ASIA.					
British India, including such native States as report	297,601,000	359,936,000	283,063,000	320,288,000	315,386,000
Cyprus	2,477,000	2,176,000	2,441,000	2,410,000	2,000,000
Japanese Empire:					
Japan	9,600,000	19,754,000	18,437,000	20,283,000	22,932,000
Formosa	179,000	190,000	200,000	178,000	200,000
Total Japanese Empire	9,779,000	19,944,000	18,637,000	20,461,000	23,132,000
Persia	16,000,000	16,000,000	16,000,000	16,000,000	16,000,000
Russia:					
Central Asia	20,925,000	12,822,000	25,491,000	11,486,000	------------
Siberia	48,670,000	31,590,000	42,411,000	45,833,000	------------
Transcaucasia*	64,000	82,000	109,000	108,000	------------
Total Russia (Asiatic)	69,659,000	44,494,000	68,011,000	57,427,000	56,000,000
Turkey (Asiatic)	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000
Total Asia	430,516,000	477,550,000	523,152,000	451,586,000	447,518,000
AFRICA.					
Algeria	34,035,000	25,484,000	25,579,000	34,080,000	31,120,000
Cape of Good Hope	1,755,000	2,000,000	2,000,000	2,000,000	2,000,000
Egypt	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Natal	4,000	7,000	4,000	8,000	6,000
Sudan (Anglo-Egyptian)	294,000	486,000	483,000	542,000	500,000
Tunis	7,523,000	10,519,000	5,729,000	4,409,000	6,000,000
Total Africa	55,611,000	50,496,000	45,795,000	53,039,000	51,626,000
AUSTRALASIA.					
Australia:					
Queensland	6,000	2,514,000	2,217,000	1,173,000	1,144,000
New South Wales	1,635,000	28,196,000	16,983,000	21,391,000	22,506,000
Victoria	2,650,000	29,425,000	21,666,000	24,156,000	23,331,000
South Australia	6,555,000	13,626,000	12,454,000	20,779,000	17,686,000
Western Australia	1,017,000	1,935,000	2,077,000	2,381,000	2,846,000
Tasmania	905,000	792,000	818,000	801,000	672,000
Total Australia	12,768,000	76,488,000	56,215,000	70,681,000	68,185,000

WHEAT—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
New Zealand	7,693,000	8,140,000	9,411,000	7,013,000	5,782,000
Total Australasia	20,461,000	84,628,000	65,626,000	77,694,000	73,967,000
Grand total	3,189,813,000	3,152,127,000	3,320,959,000	3,435,401,000	3,108,526,000

*Includes Chernomorsk only.

OATS.

Oat crop of countries named, 1903-1907.

NORTH AMERICA.					
United States	784,094,000	894,596,000	953,216,000	964,905,000	754,443,000
Canada:					
New Brunswick	5,974,000	5,316,000	5,659,000	5,875,000	5,929,000
Ontario	113,337,000	105,393,000	108,890,000	111,756,000	86,157,000
Manitoba	34,077,000	37,434,000	46,917,000	52,291,000	43,469,000
Saskatchewan	9,453,000	11,095,000	19,819,000	24,721,000	24,060,000
Alberta	5,351,000	5,786,000	9,814,000	13,551,000	8,254,000
Other	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000
Total Canada	211,192,000	208,024,000	234,099,000	251,194,000	210,869,000
Mexico	13,000	18,000	17,000	17,000	17,000
Total North America	995,299,000	1,102,638,000	1,187,332,000	1,216,116,000	965,329,000
EUROPE.					
Austria-Hungary:					
Austria	128,330,000	109,611,000	123,880,000	154,551,000	170,657,000
Hungary proper	87,334,000	62,775,000	78,009,000	87,733,000	79,484,000
Croatia-Slavonia	7,330,000	4,907,000	6,075,000	5,541,000	4,200,000
Bosnia-Herzegovina	5,612,000	3,829,000	2,935,000	3,543,000	2,831,000
Total Austria-Hungary	228,606,000	181,122,000	210,899,000	251,368,000	257,172,000
Belgium	48,345,000	37,499,000	33,786,000	45,228,000	45,000,000
Bulgaria	11,389,000	11,179,000	10,263,000	18,793,000	18,000,000
Denmark	41,176,000	38,183,000	32,659,000	40,179,000	40,000,000
Finland	17,046,000	16,995,000	18,060,000	18,000,000	18,000,000
France	309,366,000	257,811,000	269,581,000	256,943,000	314,132,000
Germany	542,432,000	477,852,000	451,017,000	580,875,000	630,324,000
Italy	16,000,000	14,000,000	16,000,000	18,000,000	20,000,000
Netherlands	20,112,000	18,592,000	16,045,000	19,588,000	20,000,000
Norway	9,091,000	6,922,000	9,868,000	9,297,000	6,000,000
Roumania	31,405,000	12,608,000	18,974,000	26,165,000	17,842,000
Russia:					
Russia proper	650,405,000	1,006,102,000	767,550,000	544,933,000	728,351,000
Poland	58,745,000	44,393,000	61,933,000	66,425,000	72,573,000
Northerin Caucasia	18,899,000	14,573,000	22,184,000	21,933,000	19,697,000
Total Russia (European)	728,049,000	1,065,068,000	851,667,000	633,291,000	820,621,000
Servia	4,398,000	3,167,000	3,549,000	4,642,000	2,984,000
Spain	22,942,000	18,500,000	22,250,000	45,632,000	16,998,000
Sweden	59,641,000	51,578,000	58,488,000	64,550,000	67,741,000
United Kingdom:					
Great Britain—					
England	85,400,000	86,728,000	75,453,000	84,102,000	94,707,000
Scotland	36,379,000	37,034,000	36,390,000	35,108,000	36,056,000
Wales	6,832,000	7,661,000	7,264,000	8,063,000	7,875,000

OATS—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
Ireland	58,816,000	60,142,000	60,754,000	62,751,000	60,080,000
Total United Kingdom	187,427,000	191,565,000	180,861,000	190,024,000	198,718,000
Total Europe	2,268,425,000	2,402,641,000	2,203,967,000	2,222,575,000	2,493,532,000
ASIA.					
Cyprus	481,000	417,000	402,000	359,000	400,000
Russia:					
Central Asia	11,342,000	8,014,000	14,279,000	9,805,000	18,048,000
Siberia	60,352,000	51,101,000	70,672,000	69,873,000	67,114,000
Transcaucasia*	40,000	20,000	44,000	35,000	14,000
Total Russia (Asiatic)	71,734,000	59,135,000	84,995,000	79,713,000	85,176,000
Total Asia	72,215,000	59,552,000	85,397,000	80,072,000	85,576,000
AFRICA.					
Algeria	7,976,000	6,631,000	7,036,000	7,000,000	7,000,000
Cape of Good Hope	2,503,000	3,000,000	3,000,000	3,000,000	3,000,000
Natal	6,000	43,000	9,000	7,000	8,000
Tunis	1,631,000	4,635,000	2,032,000	2,411,000	2,000,000
Total Africa	12,116,000	14,309,000	12,077,000	12,418,000	12,008,000
AUSTRIALASIA.					
Australia:					
Queensland	1,000	73,000	16,000	6,000	30,000
New South Wales	363,000	1,292,000	673,000	911,000	1,449,000
Victoria	4,542,000	13,858,000	6,353,000	7,460,000	9,124,000
South Australia	640,000	931,000	573,000	897,000	924,000
Western Australia	173,000	267,000	233,000	293,000	472,000
Tasamania	1,808,000	1,673,000	1,216,000	1,238,000	2,042,000
Total Australia	7,527,000	18,094,000	9,064,000	10,805,000	14,041,000
New Zealand	22,452,000	15,583,000	15,012,000	13,108,000	11,555,000
Total Australasia	29,979,000	33,677,000	24,076,000	23,913,000	25,596,000
Grand total	3,378,034,000	3,612,817,000	3,512,849,000	3,555,094,000	3,582,041,000

BARLEY.

Barley crop of countries named, 1903-1907.

NORTH AMERICA.					
Unitel States	131,861,000	139,749,000	136,651,000	178,916,000	153,597,000
Canada:					
New Brunswick	108,000	96,000	100,000	102,000	100,000
Ontario	25,147,000	25,342,000	25,030,000	26,049,000	22,403,000
Manitoba	8,982,000	11,530,000	14,507,000	18,085,000	17,281,000
Saskatchewan	687,000	617,000	922,000	1,358,000	1,393,000
Alberta	1,111,000	1,659,000	1,830,000	2,226,000	1,058,000
Other	3,000,00	3,000,000	3,000,000	3,000,000	3,000,000
Total Canada	39,035,000	42,244,000	45,389,000	50,820,000	45,235,000
Mexico	9,061,000	7,355,000	7,000,000	7,000,000	7,000,000
Total North America	179,957,000	189,348,000	189,040,000	236,736,000	205,832,000

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*Includes Chernomorsk only.

BARLEY—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
EUROPE.					
Austria-Hungary:					
Austria	73,873,000	66,815,000	70,469,000	76,024,000	78,548,000
Hungary proper	64,577,000	49,915,000	62,453,000	69,747,000	63,078,000
Croatia-Slavonia	3,839,000	2,285,000	2,864,000	2,758,000	2,100,000
Bosnia-Herzegovina	4,145,000	3,496,000	3,236,000	3,276,000	2,768,000
Total Austria-Hungary	146,434,000	122,511,000	139,022,000	151,805,000	146,494,000
Belgium	3,923,000	5,003,000	4,518,000	4,349,000	4,000,000
Bulgaria	12,773,000	12,911,000	12,080,000	12,882,000	10,000,000
Denmark	23,340,000	22,708,000	21,146,000	22,049,000	22,000,000
Finland	5,233,000	4,916,000	5,318,000	5,000,000	5,000,000
France	43,345,000	38,338,000	40,841,000	33,538,000	45,095,000
Germany	152,653,000	135,409,000	134,204,000	142,901,000	160,650,000
Italy	8,000,000	7,000,000	8,000,000	8,000,000	8,000,000
Nehterlands	3,823,000	3,606,000	4,013,000	3,260,000	4,000,000
Norway	3,255,000	2,496,000	3,464,000	3,262,000	2,500,000
Roumania	29,716,000	11,567,000	26,383,000	33,539,000	20,062,000
Russia:					
Russia proper	289,699,000	290,766,000	272,694,000	243,619,000	277,501,000
Poland	20,819,000	17,705,000	22,732,000	23,351,000	25,397,000
Northern Caucasia	39,968,000	31,246,000	43,410,000	37,306,000	41,206,000
Total Russia (European)	350,486,000	339,717,000	338,836,000	304,276,000	344,104,000
Servia	3,424,000	3,162,000	3,670,000	4,848,000	3,137,000
Spain	64,359,000	53,800,000	45,917,000	91,185,000	53,598,000
Sweden	13,570,000	13,452,000	12,858,000	14,328,000	13,553,000
United Kingdom:					
Great Britain—					
England	50,628,000	48,511,000	48,778,000	51,543,000	51,912,000
Scotand	7,739,000	7,408,000	8,257,000	7,803,000	7,466,000
Wales	2,981,000	3,077,000	2,906,000	3,116,000	2,885,000
Ireland	6,076,000	5,478,000	7,181,000	7,211,000	6,995,000
Total United Kingdom	67,424,000	64,474,000	67,122,000	69,673,000	69,258,000
Total Europe	931,758,000	841,070,000	867,392,000	907,895,000	911,451,000
ASIA.					
Cyprus	3,969,000	3,122,000	2,980,000	2,778,000	3,000,000
Japanese Empire:					
Japan	59,737,000	80,794,000	77,436,000	83,968,000	90,544,000
Formosa	38,000	58,000	50,000	49,000	50,000
Total Japanese Empire	59,775,000	80,852,000	77,486,000	84,017,000	90,594,000
Russia:					
Central Asia	2,759,000	2,262,000	3,145,000	2,614,000	4,385,000
Siberia	4,213,000	4,268,000	4,965,000	5,136,000	4,956,000
Transcaucasia*	12,000	8,000	20,000	13,000	4,000
Total Russia (Asiatic)	6,984,000	6,538,000	8,130,000	7,763,000	9,345,000
Total Asia	70,728,000	90,512,000	88,596,000	91,558,000	102,939,000
AFRICA.					
Algeria	38,496,000	36,125,000	27,350,000	35,000,000	35,000,000
Cape of Good Hope	949,000	900,000	900,000	900,000	900,000
Natal	4,000	6,000	7,000	5,000	5,000
Sudan (Anglo-Egyptian)	216,000	251,000	327,000	334,000	300,000
Tunis	11,322,000	14,815,000	7,119,000	7,863,000	8,000,000
Total Africa	50,987,000	52,097,000	35,703,000	44,102,000	44,205,000

*Includes Chernomorsk only.

BARLEY—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
AUSTRALASIA.					
Australia:					
Queensland	4,000	527,000	342,000	64,000	163,000
New South Wales	19,000	180,000	275,000	115,000	158,000
Victoria	579,000	1,256,000	902,000	1,096,000	1,295,000
South Australia	327,000	503,000	358,000	522,000	507,000
Western Australia	48,000	55,000	39,000	51,000	50,000
Tasmania	207,000	219,000	168,000	97,000	146,000
Total Australia	1,184,000	2,740,000	2,084,000	1,945,000	2,319,000
New Zealand	1,172,000	1,197,000	1,164,000	1,056,000	1,068,000
Total Australasia	2,356,000	3,937,000	3,248,000	3,001,000	3,387,000
Grand total	1,235,786.000	1,176,964,000	1,183,979,000	1,286,292,000	1,267,814,000

RYE.

Rye crop of countries named, 1903-1907.

NORTH AMERICA.					
United States	29,363,000	27,242,000	28,486,000	33,375,000	31,566,000
Canada:					
Ontario	3,064,000	2,065,000	1,769,000	1,369,000	1,116,000
Manitoba	51,000	130,000	179,000	104,000	86,000
Other	800,000	800,000	800,000	800,000	800,000
Total Canada	3,915,000	2,995,000	2,748,000	2,273,000	2,002,000
Mexico	136,000	67,000	70,000	70,000	70,000
Total North America	33,414,000	30,304,000	31,304,000	35,718,000	33,638,000
EUROPE.					
Austria-Hungary:					
Austria	81,130,000	91,685,000	98,186,000	99,246,000	86,445,000
Hungary proper	47,355,000	43,880,000	50,544,000	51,962,000	39,445,000
Croatia-Slavonia	3,386,000	2,038,000	2,537,000	1,919,000	3,000,000
Bosnia-Herzegovina	396,000	360,000	374,000	388,000	344,000
Total Austria-Hungary	132,267,000	137,963,000	151,641,000	153,515,000	129,234,000
Belgium	21,756,000	21,990,000	21,349,000	20,569,000	21,000,000
Bulgaria	7,750,000	7,772,000	7,541,000	10,818,000	8,000,000
Denmark	19,305,000	16,546,000	19,245,000	18,823,000	19,000,000
Finland	10,598,000	10,362,000	11,552,000	11,000,000	11,000,000
France	57,951,000	52,141,000	58,116,000	50,429,000	58,578,000
Germany	389,923,000	396,075,000	378,204,000	378,948,000	384,150,000
Italy	4,000,000	3,000,000	4,000,000	4,000,000	4,000,000
Netherlands	13,973,000	13,517,000	13,742,000	13,938,000	14,000,000
Norway	857,000	717,000	982,000	963,000	800,000
Roumania	7,145,000	2,201,000	7,344,000	8,900,000	2,544,000
Russia:					
Russia proper	803,296,000	893,205,000	629,671,000	555,698,000	--------------
Poland	69,100,000	76,606,000	69,088,000	74,100,000	--------------
Northern Caucasia	7,487,000	8,170,000	9,933,000	8,877,000	--------------
Total Russia (European)	879,883,000	977,981,000	708,692,000	638,675,000	776,000,000

RYE—CONTINUED.

Country.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.	1907 Bushels.
Servia	1,091,000	1,031,000	1,103,000	1,560,000	911,000
Spain	22,511,000	17,276,000	26,502,000	31,828,000	27,027,000
Sweden	23,360,000	20,708,000	24,393,000	25,915,000	21,597,000
United Kingdom	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Total Europe	1,594,370,000	1,681,280,000	1,436,406,000	1,371,881,000	1,479,851,000
ASIA.					
Russia:					
Central Asia	1,066,000	1,088,000	690,000	404,000	
Siberia	30,982,000	29,360,000	28,043,000	27,752,000	
Transcausasia*	11,000	9,000	17,000	13,000	
Total Russia (Asiatic)	32,059,000	30,457,000	28,750,000	28,169,000	32,000,000
Total Asia	32,059,000	30,457,000	28,750,000	28,169,000	32,000,000
AUSTRALASIA.					
Australia:					
Queensland	7,000	2,000	1,000	1,000	3,000
New South Wales	35,000	83,000	35,000	51,000	50,000
Victoria	22,000	31,000	32,000	30,000	21,000
Western Australia	5,000	4,000	5,000	4,000	5,000
Tasmania	9,000	11,000	12,000	8,000	10,000
Total Australia	78,000	131,000	85,000	94,000	89,000
New Zealand	40,000	21,000	33,000	65,000	43,000
Total Australasia	118,000	152,000	118,000	159,000	132,000
Grand total	1,659,961,000	1,742,193,000	1,496,578,000	1,435,927,000	1,545,621,000

POTATOES.

Potato crop of countries named, 1902-1906.

(No statistics for Switzerland, Portugal, Argentina, Transvaal, Egypt, and some other less important potato-growing countries.)

Country.	1902 Bushels.	1903 Bushels.	1904 Bushels.	1905 Bushels.	1906 Bushels.
NORTH AMERICA.					
United States	284,633,000	247,128,000	332,830,000	260,741,000	308,038,000
Canada:					
Ontario	13,350,000	17,202,000	15,967,000	14,819,000	15,494,000
Manitoba	3,568,000	4,907,000	3,919,000	2,901,000	4,281,000
New Brunswick	4,288,000	4,835,000	5,550,000	5,693,000	5,522,000
Saskatchewan and Alberta	*1,000,000	*1,000,000	*1,000,000	2,814,000	5,507,000
Other*	29,000,000	29,000,000	29,000,000	29,000,000	29,000,000
Total Canada	51,206,000	56,944,000	55,436,000	55,257,000	59,804,000
Mexico	347,000	539,000	527,000	†400,000	†400,000
Newfoundland*	1,350,000	1,350,000	1,350,000	1,350,000	1,350,000
Total North America	337,536,000	305,961,000	390,143,000	317,748,000	369,592,000
SOUTH AMERICA.					
Chile	11,616,000	10,349,000	6,131,000	6,532,000	‡6,532,000
EUROPE.					
Austria-Hungary:					
Austria	428,229,000	357,121,000	398,298,000	581,822,000	514,289,000
Hungary proper	141,538,000	165,383,000	110,402,000	168,221,000	179,083,000

POTATOES—CONTINUED.

Country.	Bushels. 1902	Bushels. 1903	Bushels. 1904	Bushels. 1905	Bushels. 1906
Croatia-Slavonia	13,059,000	19,337,000	9,311,000	12,589,000	12,854,000
Bosnia-Herzegovina	1,793,000	2,322,000	2,450,000	2,485,000	3,011,000
Total Austria-Hungary	584,619,000	544,166,000	520,461,000	765,117,000	709,237,000
Belgium	83,198,000	86,580,000	91,632,000	57,159,000	88,652,000
Denmark	27,168,000	25,256,000	24,214,000	29,954,000	28,455,000
Finland	15,298,000	19,212,000	15,465,000	20,704,000	‡20,704,000
France	441,055,000	426,422,000	451,039,000	523,876,000	372,076,000
Germany	1,596,969,000	1,576,361,000	1,333,326,000	1,775,579,000	1,577,653,000
Italy§	29,000,000	29,000,000	29,000,000	29,000,000	29,000,000
Malta	361,000	628,000	733,000	387,000	378,000
Netherlands	94,756,000	73,394,000	94,421,000	87,043,000	95,503,000
Norway	17,735,000	22,851,000	17,253,000	25,832,000	20,995,000
Roumania	4,659,000	5,246,000	3,001,000	3,733,000	4,636,000
Russia:					
Russia proper	723,435,000	675,330,000	705,170,000	686,502,000	630,211,000
Poland	288,447,000	194,829,000	179,997,000	331,529,000	296,662,000
Northern Caucasia	16,154,000	17,441,000	8,741,000	14,857,000	12,844,000
Total Russia (European)	1,028,036,000	887,600,000	893,908,000	1,032,888,000	939,717,000
Servia	1,402,000	1,527,000	718,000	1,232,000	‡1,232,000
Spain†	84,000,000	84,000,000	84,000,000	84,000,000	84,000,000
Sweden	51,377,000	59,317,000	51,314,000	74,819,000	105,742,000
United Kingdom:					
Great Britain	119,250,000	108,779,000	133,961,000	140,474,000	128,005,000
Ireland	101,761,000	88,227,000	98,635,000	127,793,000	99,328,000
Total United Kingdom	221,011,000	197,006,000	232,596,000	268,267,000	227,333,000
Total Europe	4,280,644,000	4,038,566,000	3,843,081,000	4,779,590,000	4,305,313,000
ASIA.					
Japan	7,418,000	9,824,000	11,274,000	16,255,000	‡16,255,000
Russia (Asiatic)	13,142,000	19,364,000	18,800,000	18,865,000	16,481,000
Total Asia	20,560,000	29,188,000	30,074,000	35,120,000	32,736,000
AFRICA.					
Algeria	1,851,000	1,596,000	1,655,000	1,605,000	1,684,000
Cape of Good Hope	**1,600,000	**1,600,000	1,942,000	*2,000,000	*2,000,000
Natal	433,000	345,000	451,000	466,000	454,000
Total Africa	3,884,000	3,541,000	4,048,000	4,071,000	4,138,000
AUSTRALASIA.					
Australia:					
Queensland	836,000	122,000	659,000	718,000	422,000
New South Wales	1,461,000	1,147,000	2,118,000	1,820,000	1,881,000
Victoria	4,684,000	6,300,000	6,262,000	3,467,000	4,307,000
South Australia	562,000	1,057,000	1,173,000	729,000	759,000
Western Australia	214,000	242,000	170,000	210,000	235,000
Tasmania	4,282,000	6,105,000	6,395,000	4,127,000	2,412,000
Total Australia	12,039,000	14,973,000	16,777,000	11,071,000	10,016,000
New Zealand	7,721,000	7,215,000	7,795,000	5,025,000	4,607,000
Total Australia	19,760,000	22,188,000	24,572,000	16,096,000	14,623,000
Grand total	4,674,000,000	5,409,793,000	4,298,049,000	5,159,157,000	4,732,934,000

*Estimated from returns for census year.
†Average production.
‡1905 figures.
§Average 1896-1900.
**Estimated from statistics for 1899 and 1904.

ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

(Figures taken from February Num

Number	State, Territory, or Division	HORSES					
		Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909
		Per cent *a*	Total	1909	1908	Ten-ye'r average	
1	Maine	101	117,000	$107.00	$106.00	$ 81.00	$ 12,519,000
2	New Hampshire	99	59,000	98.00	101,00	77.29	5,782,000
3	Vermont	100	93,000	103.00	101.00	77.50	9,579,000
4	Massachusetts	102	83,000	116.00	111.00	94.22	9,628,000
5	Rhode Island	103	14,000	126.00	121,00	97.70	1,764,000
6	Connecticut	101	61,000	123.00	118,00	91.65	7,503,000
7	New York	102	710,000	114.00	113.00	88.14	80,940,000
8	New Jersey	100	102,000	124.00	113.00	95.93	12,648,000
9	Pennsylvania	102	619,000	116.00	114.00	85.67	71,804,000
10	Delaware	101	37,000	100.00	99.00	78.10	3,700,000
11	Maryland	100	158,000	100.00	94.00	73.36	15,800,000
12	Virginia	101	314,000	100.00	97.00	69.18	31,400,000
13	West Virginia	103	195,000	102.00	102.00	68.64	19,890,000
14	North Carolina	101	192,000	110.00	107.00	79.30	21,120,000
15	South Carolina	101	85,000	121.00	118.00	85.71	10,285,000
16	Georgia	101	140,000	116.00	111.00	84.70	16,240,000
17	Florida	104	54,000	104.00	104.00	71.50	5,616,000
18	Ohio	101	958,000	113.00	111.00	81.71	108,254,000
19	Indiana	102	830,000	107.00	105.00	77.42	88,810,000
20	Illinois	102	1,623,000	109,00	107.00	77.60	176,907,000
21	Michigan	105	739,000	110.00	105.00	82.03	81,290,000
22	Wisconsin	103	662,000	107.00	105.00	81.82	70,834,000
23	Minnesota	104	752,000	100.00	98.00	73.58	75,200,000
24	Iowa	100	1,419,000	103.00	99.00	71.50	146,157,000
25	Missouri	104	995,000	90.00	88.00	61.92	89,550,000
26	North Dakota	110	678,000	101.00	97.00	70.03	68,478,000
27	South Dakota	106	594,000	93.00	86.00	57.16	55,242,000
28	Nebraska	102	1,035,000	91.00	87.00	60.54	94,185,000
29	Kansas	104	1,152,000	89.00	87.00	60.30	102,528,000
30	Kentucky	102	399,000	95,00	95.00	66.11	37,905,000
31	Tennessee	103	324,000	103.00	97.00	67.89	33,372,000
32	Alabama	105	168,000	88.00	89.00	65.18	14,784,000
33	Mississippi	102	265,000	78.00	77.00	57.94	20,670,000
34	Louisiana	104	233,000	65.00	66.00	50.48	15,145,000
35	Texas	105	1,342,000	71.00	65.00	37.38	95,282,000
36	Oklahoma	105	781,000	73.00	73.00	45.23	57,013,000
37	Arkansas	105	293,000	72.00	68.00	50.95	21,096,000
38	Montana	104	304,000	65.00	73.00	37.46	19,760,000
39	Wyoming	115	135,000	65.00	60.00	33.31	8,775,000
40	Colorado	105	275,000	72.00	71.00	43.91	19,800,000
41	New Mexico	110	130,000	41.00	42.00	25.65	5,330,000
42	Arizona	110	111,000	53.00	53.00	29.72	5,883,000
43	Utah	105	125,000	72.00	71.00	38.38	9,000,000
44	Nevada	94	96,000	70.00	77.00	42.07	6,720,000
45	Idaho	105	158,000	82.00	75.00	41.61	12,956,000
46	Washington	103	320,000	101.00	98.00	61.47	32,320,000
47	Oregon	105	299,000	92.00	96.00	52.83	27,508,000
48	California	104	412,000	90.00	94.00	62.82	37,080,000
	United States	103.2	20,640,000	$ 95.64	$ 93.41	$ 66.17	$1,974,052,000
	Division:						
	North Atlantic	101.6	1,858,000	114.19	112,02	86.86	212,167,000
	South Atlantic	101.3	1,175,000	105.58	102.62	74.77	124,051,000
	N. C. E. Miss. R.	102.4	4,812,000	109.33	106.89	79.64	526,095,000
	N. C. W. Miss. R.	103.5	6,625,000	95.30	91.93	65.22	631,340,000
	South Central	104.2	3,805,000	77.60	74.80	49.19	295,267,000
	Far Western	105.0	2,365,000	78.28	79.83	47.17	185,132,000

ANIMALS IN THE UNITED STATES JANUARY 1, 1909, WITH COMPARISONS

ber United States Crop Reporter.)

MULES						SWINE						
Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909	Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909	Number
Per cent *a*	Total	1909	1908	Ten-ye'r average		Per cent *a*	Total	1909	1908	Ten-ye'r average		
-----	--------	------	------	-----	-----------	98	66,000	$ 8.50	$ 8.75	$ 9.19	$ 561,000	1
-----	--------	------	------	-----	-----------	100	52,000	9.50	9.25	9.52	494,000	2
-----	--------	------	------	-----	-----------	99	98,000	8.25	8.15	8.56	808,000	3
-----	--------	------	------	-----	-----------	99	69,000	9.25	10.25	10.20	638,000	4
-----	--------	------	------	-----	-----------	101	13,000	10.00	10.00	10.36	130,000	5
-----	--------	------	------	-----	-----------	100	47,000	11.00	10.50	11.02	517,000	6
105	4,000	$127.00	$122.00	$92.54	$ 508,000	100	669,000	8.50	8.90	8.66	5,686,000	7
104	5,000	137.00	135.00	108.39	685,000	102	158,000	9.25	10.00	10.18	1,462,000	8
104	43,000	128,00	124.00	95.21	5,504,000	100	990,000	8.50	7.80	8.42	8,415,000	9
106	6,000	129.00	125.00	96.38	774,000	100	46,000	8.00	7.50	7.78	368,000	10
102	20,000	126.00	121.00	95.56	2,520,000	98	287,000	6.60	6.35	7.13	1,894,000	11
104	53,000	116.00	124.00	88.17	6,148,000	101	806,000	5.50	5.75	4.81	4,433,000	12
105	12,000	107.00	110.00	75.12	1,284,000	99	375,000	6.00	5.75	5.54	2,250,000	13
101	179,000	127.00	126.00	93.98	22,733,000	103	1,398,000	6.30	5.60	4.52	8,807,000	14
102	141,000	140.00	143.00	103.76	19,740,000	101	685,000	6.25	5.70	4.86	4,281,000	15
104	241,000	134.00	140.00	104.79	32,294,000	101	1,615,000	5.50	5.50	4.86	8,882,000	16
109	20,000	142.00	142.00	105.68	2,840,000	112	447,000	4.00	3.75	2.88	1,788,000	17
104	21,000	111.00	110.00	80.66	2,331,000	93	2,380,000	6.75	6.50	6.94	16,065,000	18
104	92,000	112.00	111.00	80.80	10,304,000	96	3,033,000	6.10	6.20	6.63	18,501,000	19
104	149,000	113.00	113.00	81.85	16,837,000	95	4,438,000	7.00	6.60	7.29	31,066,000	20
101	4,000	111.00	107.00	75.42	444,000	96	1,332,000	7.00	6.60	7.24	9,324,000	21
101	5,000	103.00	94.00	73.94	515,000	96	1,834,000	8.25	7.00	7.76	15,130,000	22
100	9,000	104.00	103.00	74.10	936,000	91	1,153,000	7.75	7.10	7.60	8,936,000	23
104	46,000	112.00	108.00	76.21	5,152,000	94	7,908,000	8.00	6.50	7.56	63,264,000	24
105	337,000	103.00	101.00	72.06	34,711,000	91	3,270,000	5.25	5.15	5.34	17,168,000	25
100	8,000	112.00	112.00	82.85	896,000	97	226,000	8.00	7.50	7.75	1,808,000	26
110	9,000	103.00	100.00	64.90	927,000	99	894,000	7.90	7.00	7.50	7,063,000	27
105	71,000	104.00	102.00	72.51	7,384,000	92	3,904,000	7.25	6.25	7.01	28,304,000	28
105	147,000	105.00	99.00	70.05	15,435,000	90	2,397,000	6.50	5.90	6.72	15,580,000	29
103	207,000	106.00	106.00	75.87	21,942,000	97	1,236,000	4.75	4.60	4.61	5,871,000	30
101	287,000	111.00	108.00	78.25	31,857,000	99	1,487,000	5.00	4.65	4.49	7,435,000	31
106	248,000	108.00	113.00	85.29	26,784,000	99	1,238,000	5.20	4.60	3.95	6,438,000	32
103	287,000	107,00	105.00	81.99	30,709,000	98	1,290,000	4.60	4.50	4.02	5,934,000	33
105	176,000	102.00	109.00	90.37	17,952,000	103	689,000	4.75	4.50	4.12	3,273,000	34
108	688,000	93.00	91.00	58.49	63,984,000	105	3,304,000	5.60	5.25	4.51	18,502,000	35
110	185,000	96.00	96.00	64.27	17,760,000	100	1,588,000	5.15	5.33	5.54	8,178,000	36
104	217,000	99.00	95.00	70.18	21,483,000	102	1,150,000	4.00	3.80	3.33	4,600,000	37
120	5,000	83.00	82.00	52.05	415,000	103	68,000	10.00	10.00	8.50	680,000	38
105	1,000	89.00	96.00	59.50	89,000	108	19,000	7.00	9.25	7.97	133,000	39
120	12,000	95.00	95.00	62.84	1,140,000	110	165,000	7.00	8.00	7.06	1,155,000	40
120	8,000	71.00	70.00	43.89	568,000	125	32,000	6.75	7.00	5.84	216,000	41
120	5,000	93.00	89.00	52.11	465,000	120	22,000	7.25	8.00	6.42	160,000	42
110	3,000	75.00	61.00	41.48	225,000	101	327,000	17.00	17.00	18.73	5,559,000	43
100	4,000	90.00	86.00	51.56	360,000	102	15,000	9.50	10.00	7.16	142,000	44
115	2,000	101.00	100.00	55.99	202,000	110	143,000	7.25	7.00	6.82	1,037,000	45
120	5,000	108.00	104.00	69.28	540,000	108	197,000	7.50	7.75	7.44	1,478,000	46
110	8,000	103.00	99.00	58.45	824,000	104	290,000	6.25	6.25	5.72	1,812,000	47
101	83,000	107.00	113.00	74.37	8,881,000	102	562,000	6.50	7.20	6.42	3,653,000	48
104.8	4,053,000	$107.84	$107.76	$78.69	$437,082,000	96.5	54,147,000	$ 6.55	$ 6.05	$ 6.24	$354,794,000	
104.0	52,000	128.79	124.94	96.32	6,697,000	100.0	2,162,000	8.65	8.53	8.80	18,711,000	
102.9	672,000	131.45	134.42	99.49	88,333,000	102.0	5,659,000	5.78	5.54	4.82	32,703,000	
104.2	271,000	112.29	111.63	81.16	30,431,000	95.1	13,017,000	6.92	6.54	7.14	90,086,000	
104.8	627,000	104.37	101.32	72.03	65,441,000	92.7	19,752,000	7.20	6.22	6.99	142,123,000	
105.3	2,295,000	101.29	100.91	72.56	232,471,000	100.9	11,982,000	5.03	4.78	4.39	60,231,000	
106.2	136,000	100.80	104.08	67.74	13,709,000	105.3	1,575,000	6.95	7.35	6.66	10,940,000	

ESTIMATED NUMBER, AVERAGE PRICE, AND TOTAL VALUE OF FARM

(Figures taken from February Num

Number	State, Territory, or Division	SHEEP					
		Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909
		Per cent *a*	Total	1909	1908	Ten ye'r average	
1	Maine	98	262,000	$ 3.10	$ 4.09	$ 3.31	$ 812,000
2	New Hampshire	99	76,000	3.30	3.87	3.26	251,000
3	Vermont	102	227,000	3.60	4.16	3.55	817,000
4	Massachusetts	101	45,000	4.00	4.49	4.32	180,000
5	Rhode Island	108	9,000	4.00	4.40	3.94	36,000
6	Connecticut	101	34,000	4.40	4.75	4.34	150,000
7	New York	103	1,165,000	4.30	4.81	4.27	5,010,000
8	New Jersey	100	44,000	5.00	4.99	4.45	220,000
9	Pennsylvania	103	1,135,000	4.50	4.62	3.93	5,108,000
10	Delaware	97	12,000	4.40	4.64	3.90	53,000
11	Maryland	100	163,000	4.60	4.55	3.83	750,000
12	Virginia	101	517,000	3.80	4.00	3.22	1,965,000
13	West Virginia	105	709,000	4.00	4.40	3.37	2,836,000
14	North Carolina	101	222,000	2.40	2.62	2.01	533,000
15	South Carolina	99	58,000	2.20	2.17	1.99	128,000
16	Georgia	96	258,000	1.90	2.01	1.80	490,000
17	Florida	98	99,000	1.90	1.97	1.95	188,000
18	Ohio	100	3,110,000	4.10	4.48	3.73	12,751,000
19	Indiana	100	1,215,000	4.50	5.06	4.10	5,468,000
20	Illinois	100	793,000	4.80	5.01	4.22	3,806,000
21	Michigan	100	2,130,000	3.90	4.46	3.75	8,307,000
22	Wisconsin	100	1,044,000	3.80	4.15	3.50	3,967,000
23	Minnesota	102	468,000	3.50	3.79	3.24	1,638,000
24	Iowa	104	747,000	4.60	4.97	4.10	3,436,000
25	Missouri	98	997,000	3.90	4.36	3.40	3,888,000
26	North Dakota	99	621,000	3.60	3.56	3.13	2,236,000
27	South Dakota	100	821,000	3.50	3.63	3.23	2,874,000
28	Nebraska	95	409,000	3.50	3.76	3.31	1,432,000
29	Kansas	105	248,000	4.00	4.15	3.34	992,000
30	Kentucky	100	1,071,000	3.80	4.22	3.15	4,070,000
31	Tennessee	101	351,000	3.20	3.39	2.47	1,123,000
32	Alabama	98	184,000	1.90	1.94	1.71	350,000
33	Mississippi	97	176,000	1.90	1.80	1.67	334,000
34	Louisiana	101	182,000	1.80	1.79	1.76	328,000
35	Texas	103	1,853,000	2.70	2.74	2.14	5,003,000
36	Oklahoma	104	102,000	3.20	2.88	2.74	326,000
37	Arkansas	95	253,000	2.10	2.13	1.79	531,000
38	Montana	102	5,634,000	3.30	3.90	2.98	18,592,000
39	Wyoming	112	6,591,000	3.40	4.15	3.11	22,409,000
40	Colorado	100	1,695,000	3.10	3.33	2.88	5,254,000
41	New Mexico	104	4,978,000	3.00	3.45	2.30	14,934,000
42	Arizona	102	1,052,000	3.30	3.62	2.66	3,472,000
43	Utah	105	3,115,000	3.30	3.88	2.85	10,280,000
44	Nevada	98	1,554,000	3.00	3.79	2.99	4,662,000
45	Idaho	109	3,897,000	3.40	3.55	2.87	13,250,000
46	Washington	97	799,000	3.40	3.73	3.06	2,717,000
47	Oregon	99	2,634,000	3.10	3.58	2.76	8,165,000
48	California	96	2,325,000	2.80	3.47	2.95	6,510,000
	United States	102.7	56,084,000	$ 3.43	$ 3.88	$ 3.06	$ 192,632,000
	Division:						
	North Atlantic	102.3	2,997,000	4.20	4.60	3.98	12,581,000
	South Atlantic	101.3	2,038,000	3.41	3.61	2.90	6,943,000
	N. C. E. Miss. R.	100.0	8,292,000	4.14	4.57	3.81	34,299,000
	N. C. W. Miss. R.	100.0	4,311,000	3.83	4.07	3.41	16,496,000
	South Central	101.0	4,172,000	2.89	3.02	2.36	12,065,000
	Far Western	104.0	34,274,000	3.22	3.73	2.85	110,245,000

*Compared with number January 1. 1908.

ANIMALS IN THE UNITED STATES JANUARY 1, 1909, WITH COMPARISONS

ber United States Crop Reporter.)

MILCH COWS						OTHFR CATTLE						
Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909	Number January 1, 1909		Average price per head January 1—			Total value January 1, 1909	Number
Per cent [a]	Total	1909	1908	Ten-ye'r average		Per cent [a]	Total	1909	1998	Ten-ye'r average		
98	179,000	$29.00	$31.00	$29.90	$ 5,191,000	96	145,000	$15.00	$16.00	$18.45	$ 2,175,000	1
97	124,000	32.00	32.50	32.31	3,968,000	94	97,000	18.00	17.00	19.04	1,746,000	2
99	288,000	30.00	30.00	28.26	8,640,000	97	214,000	13.50	14.00	15.97	2,889,000	3
99	194,000	40.00	40.00	38.41	7,760,000	98	90,000	16.00	17.00	18.77	1,440,000	4
100	26,000	43.00	42.50	40.10	1,118,000	100	10,000	18.00	19.00	21.04	180,000	5
99	137,000	38.00	37.50	36.29	5,206,000	100	83,000	17.50	19.00	21.61	1,452,000	6
100	1,789,000	34.25	33.50	33.75	61,273,000	99	898,000	16.50	17.00	18.90	14,817,000	7
100	190,000	45.50	43.00	40.19	8,645,000	100	82,000	20.50	21.00	21.93	1,681,000	8
100	1,152,000	37.00	36.00	33.20	42,624,000	100	965,000	18.50	18.00	19.58	17,852,000	9
103	38,000	36.00	36.50	31.73	1,368,000	102	22,000	19.50	20.00	20.08	429,000	10
102	158,000	33.00	32.00	29.69	5,214,000	101	141,000	20.00	20.00	19.64	2,820,000	11
102	294,000	28.75	28.00	25.01	8,452,000	103	578,000	18.50	19.00	18.91	10,693,000	12
100	247,000	32.50	33.00	29.03	8,028,000	98	538,000	21.50	22.00	21.36	11,567,000	13
100	294,000	25.00	24.00	20.99	7,350,000	101	454,000	11.50	12.00	10.85	5,221,000	14
101	139,000	27.00	27.00	23.31	3,753,000	101	225,000	11.50	12.00	10.55	2,588,000	15
101	311,000	23.50	25.00	23.96	7,308,000	100	680,000	9.50	11.00	10.05	6,460,000	16
102	93,000	26.50	29.00	22.30	2,464,000	104	691,000	10.00	10.00	9.13	6,910,000	17
102	947,000	37.75	36.00	32.79	35,749,000	95	998,000	22.00	21.00	22.74	21,956,000	18
103	680,000	35,50	33.00	31.62	24,140,000	96	1,052,000	21.50	21.00	23.22	22,618,000	19
103	1,220,000	37.00	35.00	34.18	45,140,000	95	2,056,000	23.00	22.00	24.78	47,288,000	20
105	891,000	35.25	34.00	32.73	31,408,000	99	993,000	16.00	16.00	18.41	15,888,000	21
105	1,462,000	34.00	30.50	30.70	49,708,000	98	1,114,000	15.00	13.00	16.80	16,710,000	22
105	1,092,000	30.25	28.00	28.20	33,033,000	98	1,253,000	12.50	12.00	14.68	15,662,000	23
102	1,586,000	34.00	30.50	31.01	53,924,000	99	3,842,000	22.50	21.00	24.28	86,445,000	24
102	984,000	31.00	28.50	27.05	30,504,000	95	2,232,000	21.00	20.00	21.13	46,872,000	25
105	235,000	30.50	27.50	29.25	7,168,000	100	642,000	17.50	16.00	20.49	11,235,000	26
104	643,000	30.00	27.50	28.09	19,290,000	98	1,397,000	18.50	18.00	21.11	25,844,000	27
102	897,000	31.00	29.00	29.75	27,807,000	98	3,200,000	20.00	19.00	21.60	64,000,000	28
103	744,000	33.00	29.00	28.23	24,552,000	98	3,505,000	21.50	20.00	22.20	75,358,000	29
101	402,000	30.75	27.50	26.18	12,362,000	98	700,000	18.50	18.00	18.86	12,950,000	30
101	334,000	24.00	23.00	22.62	8,016,000	100	595,000	12.00	12.00	12.98	7,140,000	31
102	289,000	22.00	21.00	19.21	6,358,000	101	544,000	8.00	8.00	8.42	4,352,000	32
100	330,000	20.00	20.00	21.16	6,600,000	101	595,000	8.00	8.00	9.42	4,760,000	33
103	196,000	23.50	24.00	23.26	4,606,000	100	480,000	10.00	10.00	10.82	4,800,000	34
105	1,126,000	27.00	26.00	23.25	30,402,000	98	7,668,000	13.00	12.00	13.46	99,684,000	35
100	338,000	26.25	26.00	25.90	8,872,000	97	1,760,000	16.50	16.00	18.03	29,040,000	36
101	388,000	19.25	18.50	18.67	7,469,000	97	674,000	8.00	8.00	9.32	5,392,000	37
108	75,000	44.00	36.00	36.47	3,300,000	103	905,000	22.00	20.00	22.88	19,910,000	38
110	25,000	40.00	38.00	37.29	1,000,000	104	872,000	23.00	24.00	23.85	20,056,000	39
110	158,000	35.50	37.00	33.98	5,609,000	100	1,454,000	19.50	20.00	21.22	28,353,000	40
110	28,000	36.50	38.00	33.28	1,022,000	100	939,000	16.00	17.00	16.76	15,024,000	41
105	24,000	45.00	43.00	35.53	1,080,000	106	639,000	19.00	17.00	16.66	12,141,000	42
107	85,000	31.50	31.00	31.12	2,678,000	101	327,000	17.00	17.00	18.73	54,559,000	43
105	18,000	40.25	45.00	36.79	724,000	110	404,000	19.00	20.00	20.24	7,676,000	44
110	76,000	35.50	32.00	32.17	2,698,000	101	347,000	18.50	17.00	19.43	6,420,000	45
10	195,00	40.00	37.00	35.00	7,800,000	98	381,000	18.00	18.00	19.72	6,858,000	46
107	169,000	35.00	35.00	31.52	6,084,000	98	743,000	17.00	17.00	18.44	12,631,000	47
105	430,000	36.00	36.00	36.01	15,480,000	100	1,155,000	17.50	19.00	20.86	20,212,000	48
102.5	21,720,000	$32.36	$30.67	$29.85	$702,945,000	98.6	49,379,000	$17.49	$16.89	$18.62	$863,754,000	
99.7	4,079,000	35.41	34.76	33.64	144,425,000	98.9	2,584,000	17.12	17.25	19.06	44,232,000	
101.0	1,574,000	27.91	28.01	25.02	43,937,000	101.2	3,329,000	14.02	14.65	13.94	46,688,000	
103.7	5,200,000	35.80	33.50	32.37	186,145,000	96.3	6,213,000	20.03	19.15	21.80	124,460,000	
103.0	6,181,000	31.76	28.92	29.00	196,278,000	97.9	16,071,000	20.25	19.08	21.67	325,416,000	
102.3	3,403,000	24.89	23.88	22.73	84,685,000	98.2	13,016,000	12.92	12.25	13.66	168,118,000	
106.8	1,283,000	37.00	35.92	34.50	47,475,000	101.4	8,166,000	18.96	19.07	20.23	154,840,000	

PART III.

PROCEEDINGS

OF THE

Joint Session of the Annual State Farmers' Institute and Corn Belt Meat Producers Association.

HELD AT

Savery Convention Room at the Savery Hotel, Des Moines, Iowa, on December 8, 1908.

MORNING SESSION, 10:00 A. M.

C. E. Cameron, President State Board of Agriculture, in the chair.

PRESIDENT CAMERON: We have an address of welcome upon our program but I have been unable to find out who is to deliver it. It seems the secretaries of the two organizations rather got the thing mixed up, and each understood the other was to look after the matter. The upshot of it is that we haven't anybody here to give us an address of welcome. As far as that is concerned, I know that you are welcome to the city of Des Moines without any address of that nature. We will begin our program with an address on public school organization by Prof. A. V. Storm, Ames, Iowa.

PUBLIC SCHOOL AGRICULTURE.

PROF. A. V. STORM, AMES, IOWA.

Mr. President and Gentlemen of the Iowa State Farmers' Institute and Corn Belt Meat Producers' Association: The people everywhere are intensely interested in the public schools. Nowhere in America do we ever have to question the interest of people in that subject. It is sometimes a dominant interest, sometimes a dormant interest; sometimes illy directed, sometimes not directed at all, sometimes well directed. The interest in agriculture is not so universal, and yet there is perhaps no one general topic in which the interest is so rapidly increasing as on the subject of agriculture. Everywhere that we go, in every paper that we pick up, almost everywhere that men meet together—in the last few years, particularly, it has become noticeable to me that the interest in agriculture is increasing wonderfully. The terms of "hayseed" and "clodhopper" and "Rube" belong entirely to another generation. The only people that I know of that use those now are a set over in the big cities like New York and Chicago, who are preparing cartoons for such papers as Puck and Judge, that we find around barber shops; and those dear people are living just one generation behind. You know when we get a cartoonist like we have in this city (and I question whether there is his equal anywhere in the United States—when "Ding" gets up a cartoon with the farmer in it he represents him in the modern conception. So there are but few people but have come to recognize that the farm and the farmer and farming are now the cynosure of all eyes. Contempt is no longer held by thoughtful people for the tiller of the soil.

I am not sure that I read the signs of the times aright, but I take this to be an indication of a great movement for more intelligent and improved agriculture.

There are three great processes of society: the production of raw material, the manufacture of that raw material into a finished manufactured product, and the transportation of that fanufactured product from place to place. The last one hundred years have seen an intense attention given to two of them. Never in the history of mankind, as we all know, has the genius of not only the Yankee, but of all civilized people, brought forth such results in the processes of manufacture and transportation; and while the problems of manufacture and transportation are not yet all solved, still to my humble mind there is no question whatever but that we are far ahead in those two departments of human activity over the first activity which I mentioned; that of the production of raw material. Just think it over a little and see if you won't agree with me. The genius of invention, the organization and use of capital, have expended themselves upon the problems of manufacture and transportation. What is the result? The result is that the process of producing raw material is far behind what it should be; and while the last generation has devoted itself to manufacture and transportation improvement, I look forward to the next one hundred years to intensify its application to process for the production of raw material.

Everybody is thinking about farming, as I said a little while ago. The commission our own beloved Henry Wallace is a member, is just a headed by that brilliant man from New York, Dr. Bailey, and of which commission our own beloved Henry Wallace is a member, is just a straw which shows which way the wind blows. Some people thought they saw in that a political movement. I am sorry for the person who can't see wider and deeper than that. Statesmen do not make movements themselves, nor politicial movements. The great mass of the thinking people get to thinking a thought, or a series of thoughts more or less disjointed; the more masterful mind of statesmanship perceives the thought that is uppermost in the mind of a great free people, and proceeds to organize and crystallize it into a form for action. And it seems to me that is what the appointment of this commission means, and that that great man has seen the trend of the times.

While interest in public schools is of long standing and almost universal, and while interest in agriculture is not of long standing and not quite so universal, interest in public school agriculture is more modern than either of these, and yet it is not wholly new. In almost any of our states we find evidences of this interest in public school agriculture. I am not going to stop to enumerate them, because I understand my time is limited. If I am right, however, in the theory that we are on the eve of a great movement for the improvement of the production of raw material in agriculture, then it behooves us to consider the conditions that will enable us to solve these problems the most rapidly.

I believe we need agriculture in the public schools for three great reasons: for better agriculture, for better homes and citizenship, for better schools, and I will pay my attention to each of those very rapidly and discursively.

We need it for better agriculture for these four reasons, looking simply toward the future for a moment: for preserving the fertility of the soil; for carrying on agriculture with higher priced labor even than we now have; for feeding a population tenfold as great as that of the past; and for so intensifying our agriculture that we shall get adequate financial returns upon land which shall double—possibly treble and quadruple—its present value in the state of Iowa. This makes it imperative, it seems to me, that the boys and the girls who are going to solve the agricultural problems of the next generation shall be differently prepared than our fathers and mothers were.

Don't let anyone misinterpret my attitude toward the men of the past. I want to say that if the boys of the next generation solve their problems as well as you have done, they will do well. I don't mean to say that the boy of the next generation must be a better man than his father, and I don't expect him to solve his problems any better than his father has done; because it is wonderful to me what the men have done who came out into this new country and made it what it is in so short a time. But his problems, while no more difficult, are very different. His father's problems were of the pioneer nature; the son's problem is the intensive and the preserving cultivation of the soil; consequently he must have a different kind of preparation. That preparation which made your father and mine fairly successful farmers will not do for their sons and grandsons.

The question is, where is this preparation for these new duties to come from? Is there a fund of scientific agricultural knowlegde which, if applied, will help to solve these problems? I believe there is, and that the great agricultural colleges have been keeping quite good pace with the demands of the times, seconded by the leading farmers in the different communities; and they are going right on. We need not oncern ourselves, then, I think, about the question of whether we can procure the new information, but we must concern ourselves with the question of how we are going to get this information to the people who are to use it; that is, what are the means by which the rising generation are going to be educated in improved agriculture?

One means is the farmers' institute; and I am delighted to know that most of the counties in this state have it, and I trust that we will never let it die out. I want to say a word more about that if I don't reach the limit of my time.

Another is the agricultural college. I won't stop to pay my respects to that; I know the regard in which you hold it.

The third is the agricultural press; and as I shall probably not have an opportunity of speaking of that again, I want to pay a tribute to the wonderful things that it has done for the farm and the farmer. It is held in different esteem from what it once was, and there are reasons for it. Of course all sorts of things appear in the agricultural columns of the press, because they are open to every one; but the people who are the dominant spirits in the agricultural press today are people who know agriculture from the ground up; that is, they have had their hands and feet in touch with Mother Earth, and they have had scientific training beside.

There is the work that the agricultural college is doing, in addition to its resident courses, by its extension work in the short courses; and there is the possibility of a correspondence course; and with these it seems to me you have covered all the available means of giving this information.

What is the trouble with all those things? They are all good, but there are a few deficiencies. One is that they reach so small a portion of the people; another is that they reach them after mature years. It is only the occasional man who is thoroughly open-minded to holding new ideas after he is forty years of age, and that hits some of us pretty hard. The wonderful Gladstone was constantly open to new truths, but he was a rare exception. We do not readily change. If this movement is important, and if, purely for the sake of agriculture, the future generations are to know more about the science and art of agriculture than they have known, we must accept and use the only educational factor in America that reaches all the people practically, and reaches them at an age when they are capable of learning. If there were no other reason, it seems to me we will have to expect the public schools to give to the coming generations the knowledge of agriculture which they will need.

If the demands and needs of agriculture were the only reasons for putting this study into the public schools, we might hesitate somewhat; but there are other reasons. Regardless of its effect upon agriculture, it is worth all the trouble and pains it is going to take, for the sake of its educational value alone. The common people for years have been demanding that the public schools give a more practical education.

The captains of industry have been demanding that they teach the boys and girls some things that they are going to have to do when they get out into the world. The teachers have had an idea of what constituted proper education for boys and girls based upon an old, worn-out pedagogy. Ten years ago people began to discover that they could apply to the processes of education some of the processes that the world has already been applying to the sciences; that is, that they could investigate the operation of children's minds. So there have been three forces actively at work in the last ten years: experimental psychology, in which they experiment upon the children's minds; child study, in which they devote their time, carefully and thoughtfully, to the study of thousands of children, to discover how their minds work; and physiological psychology, in which they base their judgment of the operation of the mind somewhat upon the operation of the body. These have revolutionized the so-called laws of education.

Now, you gentlemen possibly have not been as interested in this phase of the question as I have, but I will tell you that the educators who are in touch with the new conception of schools and schooling stand side by side with the other two classes of people that I have been mentioning: the great mass of common people and the leaders in industrial lines. They are ready to say that some of the things that the common people have been demanding should be taught, and that, purely from the standpoint of what is best for the growth of the mind, regardless of the child's future business capacity, we need a revision of our courses of study, and different material and different processes upon which the children shall partially expend their time in the public schools. We have passed the time when educators set as an aim in education the gathering of information, and have reached the point where education means anything and everything that will adjust the individual to his future environment and enable him to solve the problems of his surroundings in such a way that he will live the greatest life for himself, for mankind and for God.

When we come to consider the education in the light of a process of adjusting the mind, then we want to use those things round about the child that will help adjust him to the things that he is going to do, not necessarily as a business, but that best develop his mind and prepare him to get the most out of his surroundings. Life is a constant interchange between myself and everything that is outside of me, and to get the most out of life we want the best interchange between the individual and the things around him.

A noted man in Chicago, Mr. John Dewey, who was going to start a new school, went to the furniture dealers and tried to find equipment for his schoolhouse which conformed to his ideas. They showed him seats and desks, but none of them were what he wanted. Finally, after they had talked it over, the dealer said, "I discover what is the matter with these seats; they are all listening seats!" If you think about your country schoolhouse, you will find that the seats are all listening seats. Theoretically we are away ahead of that. We know that education is a matter of activity; that we learn through the things that we do largely more than through the things that we read. We have learned, also, that education is a process of expression as well as of impression. Sitting down here and letting things come into my mind is not the only side of education; it is a very weak side unless it is accompanied with the process of giving, "out of every word of the mouth," as the Bible says. We have learned a number of these new things, and the leading educators have come to the stand that a child shall be educated through a study of his environment. Understand, gentlemen, that that doesn't mean that because a boy lives in the country he shall study his surroundings in order to become a farmer. They are looking for the best process for developing the mind purely from the standpoint of the scientific educator. Over in New England and in some of those manufacturing towns it means hand work and tool work, but out here in the great agricultural state of Iowa it means the study of the economic surroundings, which is agriculture.

I can't help but see the problems connected with this. We must put into the public schools a wise, sensible, rational teaching of agriculture. What a sad thing it is to find a school in which the dominant idea is that a school is simply a place to study books! I can't believe any man far enough advanced to be a member of this Association believes that. No school will be a good one whose teacher is controlled by that idea. The most wonderful teaching ever done was by the Man back there by the shores of Galilee. He taught those wonderful abstract truths by means of scientific truths and an observance of the world around Him.

In this state a child five years old is allowed to go to school. But he has learned more in that five years than he will in all the other years of his life, if he lives to be 969 years old, like Methusaleh. He learned those wonderful things absolutely without books, by the exercise of his six senses upon the great world round about him. He began by kicking and squalling and complaining—and some people never get over it! The next thing his hands and feet both began to work together, and things had to roost high. The hammer and the looking-glass and the boy of three got into a mix-up entirely too often. His mother is very likely to think that the old de'il is in the lad, if she doesn't say so. It is not the devil that is in the boy; it is the Lord. I suppose she thinks that "the Lord moves in a mysterious way, his wonders to perform." But if the mother will be thoughtful, she will be very sorry to have him keep out of all that mischief, because that would mean that in all probability he would be ready to go down to one of those institutions that the state furnishes over which Mr. Cownie has charge. If he didn't get up and use all his six senses he would not be a normal child. But the point I want to make is that books form a small part of learning. There are three things a man ought to have. He ought to know books; I would not want to belittle them. Blessings on the teacher that knows how to use them in the education of the child! The second thing he must know is this great world of things with which he is going to have to do; and the third thing is that he be able to do well something that is worth having done. If the school-room is the place to educate, then anything that will educate properly for those three things and that can be properly administered without loss has a place there.

I want to come immediately to some things that concern you. In order to have agriculture in public schools we must solve three problems. The public must want the subject taught; that is, there must be a campaign of interest. We must have a set of teachers prepared to teach the subject. We must have a body of subject matter prepared for them to teach. Public sentiment is growing very rapidly, but I believe it is your duty to help increase it. I understand there are a great many men here who are officials in the farmers' institutes, and here is a field for your efforts. I don't know how the preparation of a body of teachers is going to be brought about. One man believes we ought to have district high schools; another thinks we ought to appropriate money for the denominational schools; others believe we ought to have a summer school at Ames. I am sure, however, that in addition to all these, and in connection with them, we need a correspondence school of agriculture, for we will never reach all the teachers in any other way. Do you know that there were last year 28,000 people of the state of Iowa attending by mail colleges in other states? Why should we not have a correspondence school right here, where not only the teachers, but the thoughtful, active farmer, may be directed in his work while he goes on with it? The teacher and the farmer can't get away, and we ought to help them to get in line with this movement.

I don't know exactly what the report of this new commission on the school laws is going to be, or what it will be after the Legislature gets through with it; but I believe the next Legislature should do something furthering this proposition of a more sensible and rational education of the boys and girls who live in the rural communities.

I want to pay my respects to the farmers' institute and to commend it and the people here who have been working in it for all the good things that have been done; but I believe it is just in its infancy, and I want to commend to you men the importance of taking up this subject in your programs. Get your county superintendents interested, and help by these means to make the farmers' institute what it is going to be: a tenfold more efficient means than it has been in the past, even.

QUESTION: What are the educational requirements for a farmer's boy to enter Ames?

PROF. STORM: I am not authorized to speak for the faculty upon that; and while I am to be a member of the committee on college entrance requirements for the new year, I have not yet served with that committee. I think the general requiremnts for entrance to Ames (I say this with some reservation) are about the equivalent of the first two years of an ordinary high school. That is for entering the academy, which is just below the freshman class.

THE PRESIDENT: The next on our program is an address by Geo. C. White of Nevada, Iowa, on The Farmer in the Legislature.

THE FARMER IN THE LEGISLATURE.

GEO. C. WHITE, NEVADA, IOWA.

Mr. President, Fellow Farmers and Members of the Meat Producers Association:

The subject assigned me for discussion is not one chosen by myself, yet it is one that may very properly be disucussed at this place and this time.

The Meat Producers Association was organized for the purpose of relieving the individual shippers from many injustices that then existed and with the firm and steadfast belief that the voice of an association of thousands of members united for a fixed and well defined purpose would be far more effective than individual unorganized efforts in correcting the injustices and abuses that the shipper of stock was subjected to at the hands of the transportation companies, commission men, stock yard companies and packers.

From the very beginning our association has been working for legislation, both state and national, that will correct injustice, secure good service at reasonable rates and provide a fair and competitive market for the sale of our stock.

While it sometimes seemed we were not as successful in obtaining the legislation asked for as we hoped to be, yet on the whole, as judged from the total results it is doubtful of any association, organized for a similar purpose, was ever nearly as successful as has been this one.

Since it has been necessary for this association to bring many measures before the general assembly of this state, a short explanation of the machinery and working of our legislative bodies might be instructive and valuable, and show why hearings are necessary and procedure not rapid.

When a measure is placed in proper form for consideration by one of our legislative bodies it is called a bill. A bill on any subject of legislation may be introduced by any member of either body. Two copies of every bill must be furnished the clerk, one copy is marked original, the other duplicate or printer's copy. When the clerk receives the bill he gives it the proper consecutive number, and reads the title to the bill for information. If no objection is offered the bill immediately goes to the second reading, by the order of the presiding officer.

After the bill is read the second time it is ready for commitment, amendment or engrossment and is referred, by the presiding officer, to the appropriate committee.

Under our rules a committee is allowed to hold a bill not longer than ten days, at the end of which time the committee must report this bill back to the body from which it came.

This rule, however, is flagrantly violated, and here is often the danger place of many meritorious bills.

When a bill is referred to a committee it is the duty of the chairman to notify those who are interested and both those who favor and those who oppose the measure that on a certain day and hour this committee would hold an open meeting and hear arguments why this bill should or should not become a law.

Any citizen who is interested has a perfect right to appear before a legislative committee and state his reasons for favoring or opposing any bill and is entitled to and will almost invariably receive a respectful hearing.

As already stated meritorious measures are often defeated in committee hands, one method pursued is by secret ballot in the committee to recommend the bill for indefinite postponement. Usually the recommendation of a committee is adopted by the larger body and the reason is obvious. In the House of the Thirty-second General Assembly over 400 bills were introduced. It would have been utterly impossible for each member to make a careful study of the merits and demerits of each bill. Therefore the work is divided among committees, the members of the committee make a careful study of the bills which come to them and report them back to the main body either recommending them for passage or indefinite postponement, and the report of the committee is usually adopted. Then after the bill is reported favorably by the committee and the report adopted by the larger body the bill takes its place on the calendar and comes a few days later in its regular order for passage. During the time that this bill is on the calendar all members study the merits and demerits of the bill that they may speak intelligently and vote intelligently when the bill comes up for passage.

However, there are other dangers that the bill will meet while in the hands of the committee. The method that put to death the Doran speed limit bill and other bills that had passed the House of the Thirty-second General Assembly was to delay hearings and hold the bills in the hands of the committee until the closing days of the session when a large amount of work has piled up and then shove measures objectionable to some influential interests to one side and let them die without consideration. In the Senate of the Thirty-second General Assembly a sifting committee was appointed a few days before the close and all pending bills were turned over to this committee. A resolution was then passed providing that only such bills as had been favorably reported by their committees should be considered by the Senate and thus was the speed limit and other good bills killed. Another effective scheme to kill a bill is to amend it in such a way that it will not serve the purpose desired, then even its friends will be ready to kill it. This plan is resorted to in both the committee and the main body. After the bill has successfully passed through the committee and received the aye vote of a majority of the members of the body in which it was introduced it is then messaged to the other body and there must be read, referred to the proper committee for consideration and pass through the same formalities as in the first body.

If the bill receives the aye vote of a majority of the members of the second body it is declared to have passed, is then engrossed and enrolled, is carefully read by the committee on enrolled bills to avoid errors, receives the signature of the Speaker of the House in the presence of the House and the signature of the President of the Senate in the presence of the Senate. After which the bill is presented by the committee of the house in which it is origniated to the Governor for his approval before it can become a law.

I have thus briefly tried to point out the road a bill must travel before it can become a law. To some it may appear there is a great deal of red tape about this process, yet to prevent hasty action, to avoid snap judgment in legislation, I believe it is best that bills become laws only after careful consideration and this due process of procedure has been followed.

I do not want to be understood to say that meritorious measures are often defeated from ulterior motives. They are seldom defeated from such motives. A legislator is usually as honest and earnest in doing right as other men, but I have been led to believe that some of our members are from Missouri and that it is difficult to show them the importance of some measures to the stockmen and farmers.

A large part of the meat producers' troubles are connected with the transportation questions. We soon find when we attempt to get legislation on transportation that we are likely o come in contact with a clause of Section 8, Article 1 of the constitution of the United States, by which the states delegated to the federal government the power "to regulate commerce with foreign nations, among the several states, and with the Indian tribes."

For this reason our association through its officers has been compelled to employ an attorney to prepare our case and present it before the Interstate Commerce Commission. For this same reason our association with the cattle growers and other associations sent committees to Washington to urge the passage of the rate law as recommended by the President three years ago.

Had it not been for these powerful western organizations it would hardly have been possible to pass this rate law which put to death all forms of rebate, whether through private car lines, independent sidings, or otherwise.

In the Thirty-third General Assembly there will be eight farmers in the Senate and forty-eight classed as farmers in the House. A total of fifty-six, or over one-third of the members of the next assembly of Iowa are farmers. The question which naturally arises is, with this large number of farmers will the commercial and other business interests of Iowa receive due consideration? I do not hesitate to answer in the affirmative. My experience has taught me that there are no members of the legislature who more earnestly, intelligently and faithfully guard the educational, commercial and business interests of the state than the farmer members. They have as broad and intelligent views on schools, transportation, commission form of city government and other measures and are experts on agricultural questions besides.

The interests and welfare of all classes in Iowa are so closely interwoven that neither can rise nor fall without injury to all other classes. We are all thoroughly interested in doing what we can to improve the conditions of life in our state. We are all working for better schools, better roads, better transportation facilities, better markets, better wages. To build up our towns and cities and to improve our homes.

A speaker at the Dairy Convention at Waterloo, a few days ago, made a strong plea for smaller farms, and more intensive farming.

This is much to be desired and will come but with it must come largely increasing population in our cities. We must increase our manufactures. We must find profitable employment for capital and labor at home, rather than investing our surplus capital in Canada and Texas lands. Capital invested in Iowa lands and Iowa enterprises during the next decade is sure to pay as good or better returns than that invested elsewhere.

The farmer in the legislature is as thoroughly interested in all these questions as is any other member. His progress and his success is largely dependent upon the welfare and success of all other classes.

Now, gentlemen, in conclusion let me urge upon you the importance of keeping up and enlarging this association. At a trifling expense for each member we can keep a powerful organization to protect our interests.

We will be in a position to employ able men to work out our case and, like a well drilled foot ball team, charge the line of our opposition and, figuratively speaking, demoralize them.

As individuals we can do but little to influence legislation or to even present our grievances; while as an organization, with a fair fund to pay the expense of presenting our claims we can always be sure of obtaining our rights.

When our association was organized it seemed we were organized for a single purpose. However, as the years pass we find that new and important questions are constantly arising. We have already battled with transportation, markets, taxation, stock food and other questions. We already have new questions before us. Tuberculosis in animals is already demanding the attention of our state. Who are so much interested as the stockmen?

The school laws of our state are soon to be revised. The rural school is the knotty problem in this revision. You are the men interested. Teaching agriculture in our public schools and the proposed plan to aid approved colleges in this state in adding instruction in agriculture to their normal course of study must be considered.

The question of advancing, and reducing, transportation rates, are now, and probably always will, confront us.

There will be a hundred other questions as important as these, constantly arising. Then let us keep up our organization and be ready to act intelligently and effectively.

THE PRESIDENT: We will now listen to an address by Prof. C. F. Curtiss of Ames, on the subject of Government Horse Breeding—The American Carriage Horse.

GOVERNMENT HORSE BREEDING—THE AMERICAN CARRIAGE HORSE.

PROF. C. F. CURTISS, AMES, IOWA.

Mr. President and Gentlemen of the Association:

It seems a little strange, in view of all that has been done by the government for promoting the various agricultural interests, that until recently nothing has been done by it in the way of encouragement and improvement of the better type of breeding domestic animals. Foreign countries that have been producing and furnishing us the breeds from which we have imported so largely have spent millions where we have spent cents in the improvement of their domestic animals; and as a result, they have fixed and definite types. This has come about very largely by the government aid that has been given to producing various types of domestic animals, and especially horses. It takes more time, more persistent effort, to establish a type or breed of horses than of most other domestic animals; and in consequence of that the foreign governments that are giving most attention to the improvement of domestic animals have given more liberal aid to the improvement of horses than to the improvement of other domestic animals.

Fortunately, we have in this country some of what are called native types of horses. During the latter part of the eighteenth century a horse called Imported Messenger was imported. He was a thoroughbred horse, but he early gave evidence of having a strong and a well-established tendency to trot. That horse is regarded as the foundation of the American trotting breed. His progeny also gave evidence of this inclination to go fast at the trot. The trot is termed and considered an artificial rather than a natural gait; at least in the extreme speed.

The year after Messenger was imported, 1789, Justin Morgan was foaled. Justin Morgan was the foundation of the Morgan type of breed of horses, and those two horses have been great factors in establishing types. From the one came the American trotting horse, and from the other the Morgan type.

Then later we had Roy Wilkes' Hambletonian, in 1849. That horse gave evidence of this ability to go fast at the trot in a remarkable degree —much more so than any horse previous to this time; and Roy Wilkes' Hambletonian constitutes the real origin of the American trotting horse.

From that time forward there has been a rapid development of the American trotting horse, until we have to-day the standard bred horse. It was developed primarily for speed, but there has been a constant intermingling of the blood of the standard-bred horse and the Morgan type or breed, and another type that developed about the middle of the last century, the saddle horse, from the Denmark blood. You will be surprised to-day, when you come to study the pedigrees of many of the leading horses, to find how these three lines of blood have been intermingled in many of the most prominent and most valuable horses that we have for various purposes.

The saddle horse breeders held pretty firmly to a fixed type, and as a result we have the American or gaited saddle horse; and while they are trained to go what we call the saddle gait, they are also very successful in going what we call the English gaits or the walk, trot and canter. And when you come to study the origin and development of the American saddle horse, you will be astonished, as I have been in going to Kentucky and studying pedigrees of horses in the leading breeding establishments, to find what a strong infusion there is there of Morgan blood; and you will find it also in the strains that have given rise to our best carriage horses.

The work that the government has taken up recently is along two lines: that in Colorado, where the stud has been selected for the purpose of developing the carriage horse type, and that in Vermont, where the horses have been selected combining the largest proportion and the closest adherence to type of the original Morgan, with a view to perpetuating the Morgan blood and type as largely as possible, and to developing from selected horses of the standard-bred trotting lines or infusions of Morgan blood the heavy harness type in the carriage horse.

Some twenty or twenty-five years ago a great many imported coach horses came to this country. They received a great deal of favorable attention at first, and that importation has continued more or less to the present time. But it is well known that there has been less demand and that they have received less attention in recent years than formerly. It was thought originally that we must look to the imported coach breeds for our carriage horses in America, and a great many of them were brought to this country. Many of them were fine, magnificent animals, and they attracted favorable attention on the part of our farmers and stock breeders. But notwithstanding the large importation of the coach breeds, year after year it was found in our commercial centers, in our horse markets, and by the people who were dealing in horses, that a very large majority of the best horses coming into our markets and commanding the highest prices and also coming into our leading shows, were from the native American types, and that they in some way, without any intelligent or systematic effort on the part of any one to produce a horse of that class to compete with the foreign breeds, were producing a larger number of high-class horses of the carriage type, or of the coach type, as it is sometimes called, than the imported breeds; and the consensus of opinion is, I think, that a majority of the imported coach breeds crossed with our native stock have not proven satisfactory. There are here and there horses that have been an exception, that have reproduced their type, and that have proven successful; but the great majority of them have been a disappointment. And in spite of the fact that during this time the American types were being developed on the one hand for speed in the trotting horses, for the saddle gaits in the saddle horse, and for beauty and utility in the Morgan horse, rather than the modern carriage type in particular, some way we were producing a very large number of good horses, and naturally our people began to study this question with a view of finding out how best and most profitably to produce the kind of horse that meets the modern market demand.

There has been a change in the demand of the modern market with reference to the carriage horse. Originally these breeds were called coach horses, and the coach horses that came to this country were larger than those of to-day. They were used for heavier vehicles in foreign countries, and in addition they were used on coaches in the days of coaching. But gradually there has been an evolution toward a smaller type of horse for carriage purposes, just as there has been toward a smaller type of domestic animals along other lines—a smaller and more compact and earlier maturing type; and the demand to-day is not for a horse that stands 16½ or 17 hands high, but the most of the horses that are commanding the highest prices are standing 16 hands or under, and there are more under than even 16 hands high; and with that we have the compact type and the high action.

The American carriage horse or the carriage type is very frequently called the heavy harness type, that term being used to distinguish the horse from the light harness type, which is the speed horse or the roadster. The heavy harness horse does not mean a draft horse; it simply means a carriage horse of the type and conformation that is used on the heavier vehicles and with heavier harness than we use on our roadsters or ordinary driving horses, as we see most of them in this country. That kind of a horse must first of all have beauty of conformation, style and finish; and it must have that high, true action which is essential to a carriage horse or to a high-selling horse for carriage purposes in our city markets and other places where a demand for this class of horses exists.

Notwithstanding the fact that the great emphasis was placed upon speed in all this time of the development of our American horses, we were nevertheless producing a large number of horses that were meeting this other requirement; and this has led to a study as to what the native types and blood lines are that will contribute to the production of high-class horses.

I have spoken of these three lines, and many of those are similar. In fact, some of the leading horses that we have in Kentucky, where they have produced more horses of that type, perhaps, than in any other state, are registered in all three of these stud books. So there has been an intermingling of that blood to a large extent, and notwithstanding the fact that the Morgan horse has been largely disappearing, as we have thought, it is found that very many of our best horses to-day have a large infusion of that Morgan blood.

I had hoped to have a number of views of the horses that are used in the government work, but for some reason the photographs have failed to reach me. I have here a photograph of the horse Carmen, which is at the head of the government stud. This horse is a standard-bred, and yet when you come to analyze his pedigree you will find a strong infusion of Morgan blood in it. This is at the head of the government stud in the breeding operations in Fort Collins. It weighs about 1,145 and stands 16 hands.

Here is a photograph of the horse called Red Cloud, which was Carmen's mate in the four that Mr. Lawson showed. Red Cloud was a horse that in his show days held a record that was rarely equalled. He is considered by many of our competent judges to be as good a heavy harness horse as ever appeared in our American show rings. These two horses were shown together as the wheelers in that famous four that were exhibited by Mr. Lawson. This horse Red Cloud, now 21 or 22 years old, is doing stud. service in Kentucky. He was sold last year, I believe, at $2,500, when past twenty years of age. He made one season in Iowa, and while he was not largely patronized, he left some very nice colts.

It is a little strange that until the government took up this work with this famous four that were in that team—all of the stallions, none of them had been used to speak of for breeding purposes.

I have here a picture of the horse called Whirling Cloud. That was one of the leaders in that famous four. This horse stands about 15-2 and weighs about 1,100. He is now 16 years old. We secured the use of him last spring, and he made the past season at Ames. While he has passed his show form, he is a horse that has that beauty of finish and that style and that way of going which you see illustrated in this picture. He is shown here in heavy harness and in action, and without any training or feeding, and without any special showing, this horse could be taken out and hitched any day and show you that kind of action.

When we came to analyze the pedigree of this horse we found there two crosses running to the Morgan blood, and we find in the individual conformation and makeup of this animal the marks of the Morgan blood to a large degree.

One of the things essential to a horse of the carriage type, in addition to those that I have mentioned, is that he must have finish of head and neck. We have found in going to Kentucky and studying the horse-breeding operations there that the leading sires that they are depending upon to produce their high-class horses, in addition to having conformation, style and action, and this high and true lower groin, must have long necks with clean-cut throats, and the men who are dealing in horses and putting them on the market put great emphasis upon that. It is out of the question to expect a short, thick-necked horse to ever meet these requirements. A horse to have this finish, style, action, a high way of going, and the endurance and the power of lung and staying quality, must have the long, clean-cut, breedy-looking head and neck. I think that is a feature very frequently overlooked. There is a difference in the type of horse required to meet the heavy harness demands and the type of horse required for speed, necessarily; and yet very many strains of horses that have been prominent in developing the highest speed have, when trained and fitted for carriage purposes, developed a high degree of excellence there.

I saw recently a horse now owned in Chicago and being shown there this week, son of a son sired by Hambletonian X, and the only grandson living that I know of. He is a horse with good speed record, and one of the best judges I know of told me that he is the only horse ever seen in the west good enough to go into Madison Square Garden and defeat Forest King. That is the horse that has given rise to the speed lines of our American-bred horses, and yet he has that beauty of finish and style and way of going that is essential to the carriage horse of America.

Of course the practical phase of this question that interests many of you is, can we produce that kind of horses in America, and will it pay? The speed business is a business by itself, and the farmer as a rule is not fitted to producing that kind of horses. The producing of heavy harness or carriage horses is quite distinct from that, and it is not necessary to go into the speed phase. We have all over this country a great many horses of good type for producing heavy carriage horses, and we have, moreover, a large number of mares on the farms of Iowa and other states that are suited to mate with that kind of horses. They blend and mate with them better, as a rule, than with the imported coach breeds; and the market and show records will amply justify the statement that a much larger percentage of good horses has been produced in that way than by mating them with the imported coach breeds. We haven't given much consideration to anything but speed, and it is surprising how many of the farmers in this and other states have been breeding horses with the expectation of producing a record-breaker in speed, and have lost sight of the essential characteristics of utility and finish and beauty. While it may be justifiable to sacrifice these points if we succeed in getting speed, and if we are breeding for speed and nothing else, the great majority of the horses of American blood that are being produced to-day are not in the speed class; and if we will take the breeding of some of these horses that are not considered high-priced from the standard of speed production, they will constitute our most valuable horses. While these horses illustrated here are trotting-bred and have no doubt a liberal amount of speed, none of them have raised records or have extreme speed; but they have those other qualities that are more desirable for this purpose than extreme speed. The heavy harness horse is not required to have extreme speed, but he must have good road gait. So if the breeding for speed we will give some attention to these qualities that are essential to the high-class harness horse, and that the market is putting emphasis upon to-day more than ever before and is willing to pay higher prices for, I believe we will find it exceedingly profitable; and in addition to that I believe we will be doing a great service to the American farmer and agriculturist, and to the horse users of the world, in developing what we have here in our native stock into high-class horse.

We have been accustomed to look too much to the foreign breeders for our domestic animals. We occasionally hear some words of criticism concerning the government going into this breeding work. Sometimes you will hear the criticism that it is going to cost too much; that it takes a long time to do this work. Do you know that the government spends more in the construction of a single battleship than this horse-producing work is likely to cost in a quarter of a century? And the navy department fires in fifteen minutes more value in ammunition than the government is putting into this horse-breeding work in years. I think the American government and the American breeder, uniting together, can develop these strains until we can produce some of the most superior type of horses that have ever been produced in the world. And there is the same reason for improving other breeds of animals, and when we take up that work we are going to bring about types of animals that will be peculiarly suited to American conditions and will meet the demands as well or better than those produced in foreign countries. The work may not all be succeessful; it may not all terminate as we anticipate; it may take a longer time than we anticipate. It is not an easy matter to fix types. We have fixed three distinct types of American horses already, and they have furnished excellent horses, and they will be improved from year to year. At the great International show and our great State Fairs each year we find the animals coming out in better form and with a higher degree of excellence; and so it will be with our horses that we take up in this way. If some of these endeavors are failures, and we do nothing but prove the negative and the inadvisability of doing some things, it will probably be worth as much as a positive result. So I think the work that the government has inaugurated is along right lines; and while it may take longer to bring about results than we would like, and longer than we anticipate, the result is bound to be, regardless of the government experiments, that we are going to develop in America American breeds and American types for the American market and the American demand.

QUESTION: Do we understand you to declare that the American standard-bred horse of 1100 or 1150 pounds weight is America's typical heavy harness horse? Is not a little more weight desirable?

PROF. CURTISS: No, I don't think so. As a rule, the demand does not call for a horse weighing over 1150 to 1200 pounds. Occasionally there will be a demand for a pair of horses a little larger than that—up to 16½ hands and weighing 1250 or possibly 1300; but that is very rare indeed. But there is one feature about the kind of horse that I have shown here, 15-3 hands high and weighing 1150 pounds: he looks big when in action. The horse that develops speed must be built along different lines. He will go on a low, straight line, in accordance with the maxim that the shortest distance between two points is a straight line. This horse is not developed for speed; if he had been he would not have gone that way at all. Probably he never would have gone fast enough in a speed ring to bring much money, but he went high enough in show form to win a great deal of money. So the purposes are essentially different, and yet they may be combined to a considerable degree. This horse was trained to go high, and that is the kind of action you want in a heavy harness horse. It is not required that a horse of that kind shall go extremely fast, and yet they ought to be able to strike at least a four-minute gait, and it is better if they can strike a three-minute gait. I have driven that horse a great deal this summer, and he will go out without any rein on and look just that way.

QUESTION: We occasionally see the light harness horse: what should that be?

PROF. CURTISS: A light harness horse is one of two things: a trotter or a roadster. A roadster is a horse of the speed type, but of nicer finish than the horse that is fitted for the speed ring. It is seen in our trotting-bred animals that are not developed for extreme speed, or posibly haven't it. They are driven to a lighter buggy and with a light harness. The heavy harness horse must necessarily be thicker and blockier. The blood lines may be the same, although they will select for a roadster a horse that has a better sprung rib and a broad hip and quarter. This type comes from the English type of Hackney. The Hackney has largely fixed the type for this kind of horse, and these horses have been obliged to go into the ring and compete with the Hackney, and naturally they have taken on more of that type.

QUESTION: Is there any Hackney blood in these winners at the large shows?

PROF. CURTISS: No, it may be said that there is not one drop of Hackney blood in any of them; but it is also said that these horses have gone abroad and been registered as Hackneys in one or two instances in England.

THE PRESIDENT: The next number on our program is an address by Dr. D. E. Boughman, Assistant State Veterinarian of Fort Dodge, on "Hog Cholera and the Serum Treatment."

HOG CHOLERA AND THE SERUM TREATMENT.

D. E. BOUGHMAN, FORT DODGE, IOWA.

Mr. President and Members of the Association:

It affords me great pleasure to have the opportunity to address this association on a subject of so vital importance to the stock growers of this state.

Hog cholera is a disease as most of you know which causes a greater loss to the farmer than all other diseases combined. Dr. Salman estimates that our annual loss from hog cholera in the United States is ten million dollars. As Iowa is by far the greatest hog raising state in the union it would be readily seen that our losses are enormous. If this disease can be stamped out in this state, as I firmly believe it can, it will save millions of dollars to our farmers. It is a heavy loss as well as a disappointment for a farmer to raise a bunch of high grade or pure bred hogs, to watch them grow and feed them high-priced corn in anticipation of receiving a goodly sum, possibly to pay a note or a mortgage on his farm; then to wake up some morning and on going to his hog pen to find some of them refuse to eat and with positive evidence of hog cholera in his herd, and almost as positive assurance that he can only expenct to save a small per cent of his drove.

Through the efforts of the experimental work which has been carried on for a number of years by the Bureau of Animal Industry in this state and at Washington, we are now able to produce a serum that will immunize our hogs against this dreaded disease. The process has been patented by this department of the bureau in such a manner that it insures its free use and manufacture to all people of the United States.

In a report made by Dr. A. D. Melvin, chief of the Bureau of Animal Industry at the American Veterinary Medical Association, September 10, 1908, he says it is a well known fact, that hogs which recover from an attack of hog cholera are completely immuned when subsequently exposed to the same disease. These two facts; the presence of the filtered virus in the blood of hogs sick of hog cholera and the immunity in hogs which have recovered from an attack of the disease form a basis for the preparation of the serum which we have used successfully in immunizing hogs against hog cholera.

He says that the protective serum is produced by a process of Hyper-immunization carried out as follows: An immune hog is injected with large amount of blood from hogs sick of hog cholera. This injection will not produce more than a transitory effect upon the health of the immune although they would prove certainly fatal to a susceptible hog. This treatment of immune hogs with large amount of disease producing blood is known as hyper-immunization and gives to the blood of the immune the power to protect susceptible hogs from hog cholera. In about a week or so after the immune has recovered from the effect of this treatment, blood is drawn from the immune by cutting off the tail. The blood drawing is repeated three or four times at intervals of a week between drawings, after which the immune is usually bled to death from the carotid.

After each drawing from the immune the blood obtained is defribrinated and mixed with a suitable antiseptic. If preserved in sterile bottles this defribrinated blood, or serum as it is called, will retain its potency indefinitely. The protective serum having been obtained from an immune hog in the manner indicated, the potency of this serum is determined by injecting susceptible hogs with varying amounts of this serum and at the same time exposing them to hog cholera along with untreated or controlled animals. In practice it will, of course, be found best to first collect large quantities of serum and to mix this before testing. A standard serum will thus be secured at a minimum cost. This serum having been secured, either of two methods may be used for protecting susceptible hogs. These are known as (A), the serum simultaneous method, and (B), serum alone method.

The first of these, which is to be recommended for use especially in herds which have not been exposed to hog cholera, consists in injecting subcutaneously on one side of the body of the hog to be vaccinated, a suitable quantity of serum and simultaneously on the other side of the body a small quantity of virolent blood taken from a hog sick of hog cholera.

Experience has shown that by this method hogs are given a firm immunity lasting at least six months and probably much longer.

The serum alone method, which consists simply of the injection of the protective serum without the simultaneous use of disease producing blood, appears to confer only a temporary immunity upon the treated hogs, unless they be exposed to hog cholera a short time after receiving the serum. In which case they also acquire a lasting immunity. For these reasons, the serum alone method is admirably adopted to the treatment of hogs in a herd where hog cholera has already broken out, but which have not themselves shown visible symptoms of the disease. It should be stated, that either method when properly applied will not injure the hog in any way.

In reporting results of practical tests of serum made, he says, "concerning protective power of serum from hyper-immunized immunes are based upon tests upon several thousand hogs. These tests were not carried out in small experiment pens, but in great part upon practical conditions. During the fall of 1907, approximately two thousand hogs were treated on fifty different farms, a considerable portion of untreated hogs being left in all cases as a control on the action of the serum. Both methods of vaccination were used and the herd conditions varied widely.

The herds can be roughly classified as (A), those in an infected locality but themselves free from disease; (B), those which were known to have been exposed by contact with sick hogs, but which had not developed the disease at the time of treatment, and (C), herds in which hog cholera was present and hogs sick and dying at the time of treatment. In no case were any of the ordinary methods of combatting hog cholera by disinfections and separation of the sick from the apparently healthy practiced. Where disease was present at the time of treatment, the treated were allowed to run with the sick animals along with a number of untreated animals, which served as controls; and the success following vaccination can, therefore, be attributed to the action of the serum. In herds where hog cholera appeared supsequent to treatment, all the vaccinated hogs remained well, while more than 65 per cent of the checks or untreated ones died.

In the herds which had been exposed, as in class (C), but were apparently well at the time of treatment, four per cent of the treated animals died when approximately 90 per per cent of the checks succumbed. In the herds in class (C), where this disease existed at the time of treatment and where they did not anticipate very great success, 13 per cent of the treated animals were lost where 75 per cent of the checks died.

These successful field trials, confirming as they did numerous tests carried out under experimental conditions, have convinced us of the efficiency of this method of dealing with hog cholera, and although improvements will undoubtedly be made in many other details of producing this serum, the methord is believed to be now in such condition as to make the practical use of it entirely feasible.

While my experiments have been limited with the serum, yet with the good results I have obtained and those reported by the bureau I have every reason to believe of its practicability. At the present time the great drawback to universal use of this serum is the almost prohibitive high price at which it is sold.

The price charged by those putting it on the market at the present time is $1.00 per twenty c. c., which would be a dose for a hog weighing from seventy-five to one hundred pounds, or $3.00 for one weighing three hundred pounds.

Michigan has begun the preparation of this serum, so I am informed, for the distribution to the farmers of that state at two cents per c. c., or forty cents per dose, which is sufficient for a hog of about one hundred pounds, but they hope to reduce the price materially before another season.

Dr. Melvin thinks that if he serum station would be under the control of the state, and with the production carried out with strict economy it could be brought down to twenty-five cents per dose. This statement is based upon the supposition that each hyper-immunized immune will furnish one hundred fifty to two hundred doses of serum and that the carcasses of the immune after final bleeding will be used for food, which would stand to reason, that the serum station should be located near some packing house center. There seems to be no objection to the use of such carcasses for food purposes, providing the post mortem examination by a government inspector discloses no reason for rejecting it.

The serum station should be under the control of the State Veterinary Department, as it is to the veterinary that the farmer applies when he has sickness in his herd. It is the veterinary who must hold post mortem to positively diagnose the disease, it is also the veterinarian who administers the treatment and places the affected herd in quarantine.

The expense for the setablishment of such a station would be very small as compared to the loss sustained annually from this disease. A tract of land could be leased for a term of years, rough grazing land could be rented at a nominal sum and would answer the purpose as well as expensive land. A building for preparing the serum need not be an elaborate affair. Temporary sheds could be constructed for the housing of hogs in winter time.

The field application of serum should be in the hands of the State Veterinary Department. The state could be organized into districts, each in charge of an assistant State Veterinarian who should have a supply of serum on hand so that prompt action may be taken when an infection appears.

Upon notification to the State Veterinarian that hog cholera has appeared in a certain locality the diseased herd or herds should be immediately quarantined and all hogs on the farm which have been exposed or which are not visibly ill should be treated with serum alone. All hogs on the farm which have not been exposed should be treated by the serum simultaneous method, and of course the prompt removal of dead animals should be enforced, at the same time all the hogs on surrounding farms should be treated by the serum simultaneous method.

After the establishment of a serum station by the state, it could in a short time be made self-sustaining by selling the serum to the farmers at actual cost of production and the farmers could vaccinate their hogs when they are from two weeks to eight weeks old, they could do it at a very small expense. A pig weighing twenty-five pounds only requires about 5 c. c., at the price that Michigan is selling it to its farmers it would only cost ten cents per hog.

It appears to me that if this corn belt meat producing association would ask for an appropriation of sufficient sum to establish a hog cholera station, it could not be turned down by that body.

QUESTION: What is the difference between swine plague and hog cholera?

DR. BOUGHMAN: There is a difference of opinion as to whether there is a distinction or not. There was a time when they thought they had found the specific germs for each disease. Dr. Niles tells me that this serum will act as well on one as on the other.

Question: What is the cause of hog cholera?

Dr. Boughman: It is some specific agent, but at the present time they don't know what it is.

Question: Don't hogs have any other disease but hog cholera?

Dr. Boughman: Yes, hogs have other diseases, but the disease on which the government has been experimenting the most, and for which they have found a treatment or preventive, is swine plague or hog choelra. It is commonly considered contagious, but it is infectious and possibly not contagious, because it is a fact that a man's hogs on the other side of the fence from where they are dying do not take the disease The active agent must be carried from one animal to another; it is not an agent that flies in the air. I do not think we have very many diseases outside of hog cholera that are very destructive .

Question: I wish you would give us the diagnosis and the appearance of the animal that is taken with hog cholera, and also of the disease known as swine plague, together with the other diseases that attack the hog on the farm.

Dr. Boughman: In an outbreak of hog cholera you will find a difference in its expression. Some hogs have lung trouble; others ulcer of the intestines; others have the ears affected, or will be red all over the body.

Question: Isn't there a peculiar odor?

Dr. Boughman: Any sick hog has a peculiar odor that is characteristic to the hog and not of the disease, I think.

Question: After a hog dies from any cause I very often open and examine it. What organs should I examine for hog cholera or swine plague?

Dr. Boughman: You should look at all the organs. You may find just an affection of the lungs, or an ulceration of the intestines, or both; but the place to look is in the lungs, the intestines and the kidneys. In regard to the lesions that we find in hog cholera after a hog is dead, I think the government inspector, Dr. Chester Miller, who is here, can give us some idea on that.

Dr. Miller: There is no definite, very plain symptom, except the way the hog acts. With us at the yards, we may see a bunch of hogs come in of which some will lag behind a little. If on following them into the pens they go to eating or drinking, and then go over to one side and lie down, with perhaps a little difficulty in breathing (some of them will vomit very readily on drinking water; they will do that without cholera, however), we come to the conclusion that nine times out of ten those hogs have cholera.

If you want to know the post-mortem on a hog, one of the most prominent symptoms you will find is that the lungs are very badly congested. One lobe or perhaps the entire lungs may be more or less solidified, and dark. That is usually in the acute stage, and possibly the latest stage. The lymphatic glands are invariably black, I care not how recent may have been the affection or how little the hog may seem to be sick. If you will cut down through the spine to the bones you will invariably find them black. Then you will find in the intestines an area that is black. It may be local or pretty well diffused through the whole bowels, but usually is confined to a small area. In addition to that you will find the spleen enlarged and very much darker than usual. Those are probably the symptoms that will appeal to the average farmer, who is probably not an expert in pathological conditions.

Nine times out of ten, if you have a hog die suddenly and notice a few more sick, you have cholera, and the sooner you make a separation the better.

The convention thereupon adjourned to 1:30 P. M.

AFTERNOON SESSION.

President A. Sykes of the Corn Belt Meat Producers' Association presiding.

THE PRESIDENT: We will open the program this afternoon with an address by Dr. M. P. Ravenel of Madison, Wis., on Bovine Tuberculosis.

BOVINE TUBERCULOSIS.

M. P. RAVENEL, MADISON, WIS.

Mr. President and Members of the Corn Belt Meat Producers Association:

This question of bovine tuberculosis is one which is agitating the whole world at the present time. I could spend a longer time than any of you would want to listen in talking on this question from either one of two standpoints, both of which I will try to touch on a little.

The first one is: Is it going to pay the farmer as a farmer to raise healthy cattle? Is bovine tuberculosis a curse to the farmer or a thing that he wants to coddle and help along and keep amongst his cattle?

Second: What relation has bovine tuberculosis to human health, and is there any reason whatever for us to tackle this problem from the standpoint of public health of our nation?

From the farmer's standpoint let me say that tuberculosis is an economic scourge. Whether you think it is right or wrong, it is an actual fact that many of the cities throughout the United States are passing laws requiring that milk, butter, cheese and products of cattle sold in those states shall come from tuberculosis-free herds. I believe it will take a long time to upset these ideas. Before long the farmer who has tuberculosis in his herd is not going to market his product at all, or if he does, he will not be able to market them profitably.

There is one little sidelight on that, and probably some of you gentlemen know a good deal more from this standpoint than I do. The packers in our country estimate that they lose $3,000,000 a year through tuberculous cattle, counting hogs as cattle. How long are they going to stand for that? Some of them are kicking already. Some of them use this argument: "We have to deduct from our profits our losses when we buy tuberculosis cattle which our government condemns. If we could be sure that when we buy a hundred head of cattle, every one is going to be marketable and can pass our Federal examination, we could pay the farmer a better price." Some of you may think the packers are a pretty tough lot and that they will squeeze you anyhow, but so true is this that the packers themselves are working for uniform laws in the different states of the upper Mississippi valley, so that each state will handle this tuberculosis problem in the same way.

Some of our states have laws prohibiting the importation of tuberculous cattle. We have such a law in the State of Wisconsin, and we have some of the best breeders of fine cattle there that can be found in the United States. Before those men can sell an animal to go to any other part of of the state they must show us that it has been tuberculosis-tested and is an absolutely healthy animal. If you buy an animal that proves to have tuberculosis, the sale is off and you are not obliged to pay one cent for it. It is a common-sense rule; a man has no right to sell me a diseased animal.

There is another point of view. I believe I am right in saying that the creamery method of handling milk is increasing it at the present time. Mr. A. has a perfectly healthy herd of cows; Mr. B. also has a healthy herd; Mr. C. has two or three sick cows. They all send their milk to the same creamery. They get back their skim milk and feed it to their cattle. What is the result? By-and-by they all have tuberculous cattle. One man who doesn't believe in the tuberculin test or that tubeculosis is a dangerous disease can infect his neighbor's cattle. If I had my lantern slides I could show you where two creameries spread tuberculosis to twenty or thirty farms.

Iowa is a hog-raising state. You know that tuberculosis is increasing among swine tremendously, not only in the United States, but in every country in the world. It is nearly three times as prevalent among hogs at the present day as it is among cattle. Swine get it from these skim milk products, and also from following tuberculous cattle and eating their droppings. In Wisconsin there is a man named Jones who makes sausage. He has been watching this matter very carefully year after year, and every year the percentage of the number of hogs that he has to reject on account of their having tuberculosis increases. Last year it was something astonishing. Where is this loss going to come eventually? On the farmer. The packers will tell you it comes on the farmer to-day, because they could pay a better price if all of the stock they buy would pass the government inspection.

How are you to detect tuberculosis in a herd? There is one certain and sure way, and that is by the tuberculin test. The consensus of opinion is that if properly applied, it is almost absolute. I have statistics from the government showing that of 23,869 animals which responded to the tuberculin test, 23,585 showed tuberculosis when slaughtered. That is a percentage of 98.8. I may go further and express my belief that practically 100 per cent have tuberculosis, and I will give you one instance to demonstrate that. At the University of Wisconsin we slaughtered one animal last spring that showed no lesions when we examined it. We took the liver and other organs and examined them under the microscope, and the liver was absolutely full of these little tubercles.

One fault that is found with the tuberculin test it that it is too delicate; it shows very small lesions. A tuberculosis nodule as big as a hickory nut will sometimes give as strong a reaction as the animal that has gone too far; and when an animal has gone too far, it will not respond to the tuberculin test.

A very few simple rules must be observed in giving the tuberculin test. The cattle must be kept quiet. You must not take a bunch of cattle directly off the railroad train and test them. You must not drive them from one farm to another and test them that same night. You must take their temperatures carefully and not give them cold water while you are testing them. And you must get good tuberculin.

When you clean out your herd, what are you to do? Be perfectly sure that your stable is clean. We have taken scrapings from the mangers of stables where tuberculous cattle were kept which were simply loaded with these germs. The cow, exactly like the man, gets rid of a number of these germs in its saliva, and it sticks in the corners of the manger.

In putting in new cattle you must be careful not to buy a cow which is tuberculous, because if you do you will spread the disease. Your cow may look well, but I have a lantern slide of an animal which took the first prize at Chicago that was simply riddled with tuberculosis. What is the explanation? Simply that a cow, like a man, if well fed and taken care of, is not going to lose flesh very rapidly with this disease. The disease may go all through the organs of the animal before it begins to lose flesh and get sick. I have seen men at a hospital the same way. So after cleaning out your herd and your stable, be sure to put in only healthy cattle, because one tuberculous cow will spread the disease down the rows of stalls, from the habit cows have of licking each others' noses. I will stake my reputation, and any other man who has studied the question will, that if you do that, and don't use factory skim milk or allow tuberculosis to get in, you will have a healthy herd until the crack of doom, because tuberculosis never starts of itself. You can have a cow weakly and ready for tuberculosis, but you will never get tubeculosis until pou put the seed there. It is absolutely in our hands to clean up a herd and keep it clean, and the man that doesn't do it is either careless or ignorant.

I think it is going to pay you from a purely practical standpoint to do this. I have a few figures here to show you what the condemnation means. Up to June 30, 1908, the United States government had inspected 58,973,000 cattle, and had condemned about one per cent on account of tuberculosis. The economic loss to the farmer on these equals $2,882,000; and on the uninspected cattle it was $4,102,000. That is certainly worth saving. I could go further and give you theoretical figures which are no doubt true, regarding the depreciation on farms and loss of milk and breeding values.

What can we say about the danger of tuberculous cattle to mankind? I have no doubt some of you will get up here and try to hammer me on what Professor Koch has said, and I want to give you a clear history of what he has said and what right he has to express an opinion.

Professor Koch astounded the world in 1901 in London by saying: "I therefore consider the two diseases (human and cattle tuberculosis) as being different. Human tuberculosis cannot be transmitted to cattle, and if the converse is true, it is so extremely rare that I consider measures against such transmission of no avail." In other words, "Go ahead and drink milk; there is no danger in it." You know that following that the German government appointed an Imperial commission, which was directed and governed by twenty-five of the leading professors in Germany, including Koch himself, to investigate this subject, and the work was done in Berlin. They have reported quite fully. They have found out of all the cases they examined that ten per cent were due to cattle tuberculosis, although they moved heaven and earth to sustain Koch. The English appointed a royal commission at the same time, and the reports show that England is worse than Germany in this respect. The increase is accounted for by the fact that the laws in England are much more lax than in Germany. They find that 23 per cent of all the cases they examined are due to bovine tuberculosis; and if you limit those cases to those showing some intestinal trouble, they find that 48 per cent are due to the bovine germ.

What is Prof. Koch's standpoint at the present time? As you all know, he was in Washington the other day at the meeting of the Anti-Tuberculosis Congress, and read a paper on this same question. Almost all the newspapers distorted what he said, and I presume the impression in this meeting is that Koch maintained his stand in London in 1901. These are almost the words he said: "I therefore consider that in the suppression of tuberculosis we must primarily direct our efforts against the human disease." Nobody else on God's green earth, except Von Behring of Germany, has ever had any other idea. While we recognize that cattle tuberculosis is a great danger to human life, human tuberculosis is a greater. Just what the proportion of the two is I can't tell you. The English statistics would apparently show that two thirds of the cases come from human sources and one-third from cattle sources. In our country, where our cattle are more healthy, the figures are different. I have never tried to guess at figures, but in children I believe the figures show that upward of 25 per cent of the cases are due to the cattle germ. In Washington the other day Dr. ——— made the statement in Koch's presence that of the cases of tuberculosis of the glands of the neck one-half are due to the cattle germ.

Some of you will say: "Koch is the man that discovered the tubercle bacillus, and he ought to be listened to." I agree with you; but is he the only man? In spite of his discovery he worked twelve years without finding any difference between the human and bovine germs, and he worked nineteen years without finding out that the cattle germ could be transmitted to mankind; and he was not the man who taught us the best method of growing the germ which is used in Germany to-day. Who are the men who hold contra views to him? The whole scientific world. He has not one single backer that I know of. Do not understand me as trying to belittle Professor Koch's great work and discoveries, but I think it is a mistake to say that he is the only man entitled to any opinion on this subject.

I have in my pocket at this moment a record of a family of nine people of whom eight died with tuberculosis, with no family history whatever. The only member of the family who escaped did not drink milk, all the others being great milk drinkers. In another family in the same block four died of tuberculosis, drinking the same milk. I don't give you that as absolute proof, because the germ was not isolated and proved to be bovine. But it won't be long, I believe, before no farmer can sell any dairy product in any city of the United States unless he can show that it comes from clean herds, and I don't think I can give you any stronger argument for getting clean herds and keeping them clean than I have given.

QUESTION: What is the best way to disinfect stables?

DR. RAVENEL: Light will kill every germ known. Direct light kills them in from one minute to one hour, but even diffused light will clean out any stable in 36 to 48 hours. I would say, have light, clean stables, with plenty of fresh air. Use a strongly alkaline soap and thoroughly scour. The best disinfectant for general use is what we call milk of lime. Get lime and water-slack it—about 60 parts of water to 100 of lime; and then take one part of that to four parts of water. If you have any rotten wood, clean it out and put in fresh bedding. Put in cement floors if you can. Leave your stable vacant for eight or ten days. Formaldehyde is the best disinfectant, but it is not possible to use it in the average stables very efficiently.

The next on the program was an address by Dr. P. O. Koto, State Veterinarian, on "Bovine Tuberculosis." The subject matter of this address will be found in full in part IX, Extracts from State Veterinarian's Report.

THE PRESIDENT: Hon. H. E. Deemer of Red Oak will now address the convention on the subject, "Country Life vs. City Life."

COUNTRY LIFE VS. CITY LIFE.

H. E. DEEMER, RED OAK, IOWA.

Mr. President, Gentlemen of the Association (or perhaps I had better put it in the plural, and say Associations):

A personal foreword may not be inappropriate; indeed, it may be well to explain my presence before this distinguished body of agriculturists. In the first place, I will say that men in my profession are always looking for precedents, and I believe I have one which I may follow to-day. One of my most distinguished predecessors always attended these agricultural meetings, and was for a time the President of the State Agricultural Society of Iowa. I mean the late lamented George G. Wright, at one time United States Senator, and after that Chief Justice. Again, I feel that any man who as a boy followed the down row when the temperature was lower than it is to-day and the snow deeper, and went out and warmed his bare feet where the cow laid the night before, is entitled to speak to almost any farmers' organization. In the next place, I claim the distinguished honor of being one of the oldest agriculturists here. You know there is a difference between a farmer and an agriculturist. I am going to try to place myself on both feet. Twenty-six years ago I came as a delegate to the State Agricultural Society at Des Moines. We met in Moore's opera house, as I remember it, and I see but one face here that was there then. I do remember Uncle Henry Wallace and Judge Wright and a few of that type of men. At that time, if I mistake not, I had the honor of nominating for a member of that board who afterwards became one of its best Presidents—Mr. John Hayes of Red Oak. And then latterly I have had some little connection with short courses in this state. So that I feel that I can speak to you as agriculturists as well as farmers.

Living neither in a large city nor on a farm, but on the outskirts, and as far away from the court-house as I can get in a good county seat in Iowa, I feel that I can discuss this question which you have submitted to me from an unprejudiced standpoint. Of course this subject, "Country Life vs. City Life"—from the business and social points of view, assumes that there is an issue—a difference and a distinction, and of course there is, because, as you all know and have heard many times, there is a difference in the Creator. Man created the city and God created the country. But when we come to look right down into the heart of hearts of mankind and open the windows to the soul, we find that after all, humanity is the same the world over. But there is a manifest distinction between city life and country life. There are differences due to the fact that men have different capacities and different adaptations. The same thing is not a pleasure to all men and all women, and it is because of this fact that so many mistakes are made. Many men who ought to be on the farm are in the city, and some men who ought to be in the cities are on the farm. But unfortunately the drift in this country for years has been toward the city, and I hope you will not forget, here in this great valley, that our wealth is in our lands, and here is the granary of the world, and somebody must scientifically cultivate this land and get the most out of, because God put us here for that purpose. There is a glare and glamour and a glittering about city life. It is supposed to be the business and the social standing, but we all know what danger there is in fire and how many wings are clipped by the light of the candle. And so the Great White Way that they talk about in the cities is full of peril and danger which you never find out on the good old highway.

While the city is the center of business, you all know that but ten per cent of the men who engage in business make a success; ninety per cent make a failure in a business career. But there are some things in the city business life that the farmer must learn. Business principles are same in every relation of life, and system is what has made the business man a success in the city. System means the stoppage of waste, and so the farmer must, if he succeeds, have better business methods upon the farm. I remember that Philip Armour one time on the witness stand, when questioned regarding his profits, said, "Gentlemen, if you will simply give me clear the tongues of the animals I kill, it is all I care for by way of profit." And John D. Rockefeller used to say (before his recent cross-examination), when asked how he made his money, that he made it out of the by-products of his business—the stuff that used to go to waste. And so it is system that has prevailed in the industrial life of this nation. Even the professional men have adopted it. If, unfortunately, you drifted into a doctor's office, you have gone onto a card, which the doctor keeps in his card-case until you go down to the last half acre, when it is taken out and torn up. And if you go into a dentist's office, your teeth are numbered and put on cards. And if you drop into a lawyer's office you get onto a card. And they tell me this last campaign was run on the card system! One thing which I wish to emphasize in contrasting city with country life from the business point of view is that what is needed now on the farm is some means of stopping the tremendous waste that is occurring there. You want to adopt the card system and take reckonings now and then, to see whether this particular branch of your business is paying, and if not, find out why. Most men fail in business because there is a waste that they can't stop.

When we come to the social life of the city, it is all supposed to be there. But don't you know that there is really more caste, more classes, more snobbery, right here in America in some of our great cities than there is on the continent? You don't find social democracy in the large city today. Where do you find it? Out on the broad acres; there are no such classes there. And what of the social life in the city, full of conventionalities? The heart is all taken out of it. And what do these people do? Why, they hark back to the farm, and the first thing you hear about is a "Country Club." There is that beauty of scene that reminds many of them of the old days which I spoke about a little bit ago, when they went barefoot—that scene which is more beautiful than any of their pictures, no matter how expensive they may be. A man never came close to the soil but what he harked back to it at some time. The strength of England today is due to the fact that London is simply the gathering-place for the English gentry. When business is over they go to their country-places; they really live out on the farm. And you are going to see in this country some day a going back to the old preserve, just as they have done in England for centuries. Where do the artists go to paint? Not down on the Bowery or on Broadway or on Fifth Avenue. They take their palette and their colors and go out into the country for some nice landscape. And then the man who is poetic doesn't sing of sky-scrapers and that sort of thing, but with Bryant and Burns he sings of Nature and her glories. And so in this social life in the city, when you see the better part of it, they are, as I say, harking back to the farm, whence the most successful ones of them originally came .

There are advantages, of course, in the city—many social advantages which cannot be had upon the farm. And here we get a lesson that I hope this country life is going to take up, and that is that we have allowed social affairs in the country to degenerate. We have no such social gatherings as we used to have in my boyhood days. We are having a revival of them in some places. We are trying to establish the old debating club—and I saw evidence of it here a few minutes ago—and the old spelling bee. There ought to be a place in every township where they could get together in a social way and have either the old husking bee, spelling bee, or things of that sort. There is where, as I said before, you will find true democracy. You will find there is no caste there; you will find very few classes among the farmers.

Of course, I know the telephone and rural mail delivery have made many changes, but man is a gregarious being and he needs and demands social relations with his neighbor, and he ought to have them; and you men, when you come to revise the public school system, ought to see that there is a central school, not only for school purposes, but for social gatherings as well. And then don't forget to have a church too; it is a great social institution and should be sustained if there were nothing else in it than that feature.

I want to refer just a little to this matter that the President has taken up; I am glad he has. It is not enough to say that there are other things that he should have taken up in its stead. I really think that probably the slums of the cities demand more attention than life on the farm; but life on the farm demands attention, and I am very glad the President has taken it up, and that our own Henry Wallace is one of the members of that commission.

Somebody said the other day that the trouble on the farm resulted from three things: first, we must have better farmers; second, we must have better business methods; third, we must have better living (when speaking of the farm life.) I want to refer just a few minutes to these items hastily.

A distinguished man in this state once said that no man could raise and sell corn at 20 cents a bushel at a profit, and people laughed at him; but I want to say that I don't believe any man can do it on land that costs $150 an acre—that is, unless he increases the yeild per acre.

That is a very practical businss question that to my mind is facing the farmers of this great state of Iowa. Down in my country they are getting $175 an acre for some of the land, and this thought has often occurred to me: Suppose corn ever does get down to 25 or 30 cents a bushel again, how many bushels an acre will we have to raise on an average to keep that land up to that price? That is a good, sensible, business question, isn't it?

And then I think of the tremendous waste on the farm. But you say the farmers get along, and none of them fail, while 90% of the business men do; there is no occasion for worrying. But you are getting this land up where you have got to grow something off of it or it is going to come down, and that means a loss to you. There is no reason why the farmer should not be the most successful man we have. He has made more money than anybody else in the last ten years—that is, the farmer that has been up to snuff and attended to business. Of course he can always make a living, because he can dig it out of the soil; but no man ought to be content with making a living, and I think we are beginning to realize as never before that we are trustees of this soil and that we have a duty to posterity with reference to it. We are just reaching that point where we see the necessity not only of conversion, but of conservation. There have been great reforms going on all over this country in all sorts of business and all sorts of life during the last four or five or six years, and we are glad to see this great moral awakening. With it of necessity comes this idea of our responsibility, and that responsibility has brought up this thought now of conservation of what we have. And so it is not only your duty to make a living off your land, but to hand it down to posterity (your heirs, if the lawyers don't get it) in such a condition that they can make a living off of it.

I heard the distinguished secretary of agriculture say out on the fairgrounds during the last state fair that there was as much nutriment and sustenance in a ton of corn stalks as in a ton of timothy hay. And yet I have sat on my porch and seen beacon lights all around the horizon every spring where men were burning up that precious corn stalk! You never go out into the country but what you are amazed at the waste that is going on constantly. How many of you straighten out your strings? How many of you take out the weeds from the fence corners? How many of you plow up close to the edge of your land? How many take care of the highway as you should? You are not the only law-breakers; many of us do the same thing; but nevertheless, if you stop to think of it, there is more waste on the farm today than in any other sort of business that men are engaged in.

There is a way of overcoming all this, and I think it is a duty that a man owes to himself and his family and posterity to do it. I know when I tried my farming experiment we used to feel pretty well if we got 15 or 20 bushels of corn to the acre on the average, and now, with the modern methods of scientific farming, there is no excuse for a man not getting 70 bushels per acre off the good corn land of this state. Some day he is going to do it, and that will be when the boys are kept on the farm and made to feel that it is just as much of a science to farm as it is to go into the city and practice dentistry.

People are getting new views and new light on this great question of better farming. I wish that I might have the time to tell you what has been done with the lands in Holland and Denmark. You all know how their lands have increased in value because of the revenue from them justified it—up to $400 per acre. What are they doing? They have experts out finding what the market demands, and then they grow the best that can be produced in those lines. Prices, of course, are the highest. Heven't we been extravagant and wasteful and prodigal in this country? Some of you used to live in New York State or Pennsylvania or New England. You can go down there and buy farms today for from $10 to $20 an acre. I saw advertised in one list 150 acres in central New York, with an eight-room house and two big barns, for $1,500. Why is it? Because the men down there have been absolutely wasteful. They have had to buy a place to put fertilizer on; that is about all it amounts to. I did see, however, that some of them have established sanatariums for taking care of cats!

I have been amazed at the lack of attention that has been given by the farmer to the school problem and the educational problem. Probably the largest percentage of his tax goes for school purposes, and yet how many have paid any attention to it except simply to see that their daughter or their neighbor's daughter got a place to teach in the country school. There is to much of that. There has been too little of education that has been of any practical good to the boy and girl that have grown up on the farm. If the boy does have any ambition to succeed, they send him down to the high school, and the high school teacher says: "Here is a pretty good candidate for the ministry;" or, "he will make a pretty good lawyer or doctor." The fact is that that boy ought to go right back to the farm, and he will make a success if he goes there; whereas these teachers that are trying to train him will make him an utter failure in life. You are entitled, paying the taxes that you do, to a schooling for your children that will fit them for life. Education should be vocational as well as cultural, and if the boys and girls once get interested in the vocational education you know what they do; they quit school as soon as they get to the eighth grade, and that is the last of their education, except as they go out and get it in the experience of the world. We are not educating men today even for good mechanics. The apprenticeship system is practically gone; it is all piece work. A man goes down and gets hold of a machine that drives pegs into the holes, if he is making shoes. He should be educated along better lines. Let him find out where he belongs, and then if you qualify him for that work he is going to make a glorious success of it; but if you try to make him something that he is not fit for, because you think he is a brighter boy than some one else has, you are likely to make the mistake of your lives. Education should be broader. What is it for? It is to fit a man for his environment; and the one thing that you ought to give your child is a chance for him to expand and find out himself what he is good for. When he discovers that bent, with a proper educational system, educating the head, the eye and the hand, that boy is going to make a success of life. This is coming. I haven't seen the president's message yet; it has been delivered today, I suppose; but I imagine you are going to see a good strong plea for what is known as the Davis bill, which will give establishment to these secondary schools of agriculture and mechanic arts all over the country. I believe every Iowa congressman is going to vote for it; all except one have told me they should. The great state of Iowa ought to do something for this great movement; you are entitled to it. You owe it to your children to give them a chance in life, and you know perfectly well that when you send your boy from your own doorstep out to the high school you never expect to see him back again contented. Why? Because his whole education has been to drag him away from that farm and to belittle the occupation in which you men are engaged with so much success.

I am not decrying our present system; it is right for the small percentage of boys and girls who get it—and there are only about three per cent of them that do. But I don't believe in making it so top-heavy. I believe in bringing up the rear end and giving the 97% an opportunity.

I am talking to some men of whom it is hard to tell whether you are farmers or not. When you come to differentiate between those who are city bred and country bred you can't do it any more. Nobody any longer wears hayseeds on his coat—or else it is becoming so popular that they all do; I don't know which it is. What is there in the city, after all, for the farmers? Talk about going to the art galleries and looking at pictures 18x24 of some landscape, with its group of trees and its brook running here and there, for which a man has paid $25,000 or $50,000, when you men can go out and see the great canvas painted by the Almighty Himself for absolutely nothing! And then they talk about the flowers from the conservatories and about the roses that they have in the cities and that you will have here to-night upon your tables! Did you ever see your mother come in from her little conservatory back there in the garden with that handful of old-fashioned flowers that she had grown with her own hands? Was there ever any rose that smelt as sweet? There was a joy about that work which no woman ever found who went to the hothouse and purchased a bouquet with its seven-foot stems to support it. Nearly every man here, I think, remembers that old motto—I think it is painted on one of the drop-curtains here in a Des Moines theatre—and many of you found it true; you have found "Tongues in trees, books in running brooks, sermons in stones, and good in everything." If the farmer has not done that, I don't know who has.

There are some great advantages of the man who lives upon the farm. In the first place, he has time for reflection. You get into a city even the size of Des Moines, and if you catch a man of business on the street you find he is always in a hurry; he has his watch in his hand. Half the time he hardly takes time to eat, and at five o'clock he closes his door and rushes home. Very little of the enjoyment of life he really gets, I think; all there is comes from within and not from without. The farmer doesn't read as much, probably, as the city man, but he remembers what he reads, and he thinks about it; and whenever you get a man to thinking he is having some enjoyment; he is getting something out of life; he is not a mere imitator. The consequence is, as you all know, that there are fewer vagaries among the farming population than in any other of the worlds. They don't take up with these new, hair-brained ideas and isms; they think it out dispassionately and without reference to political parties or creeds. I need not say that they are the most independent men on earth; you all know that; and yet it will bear repetition.

Now, if you will just devise some means whereby you can re-establish something of this old social life that some of you men ejoyed when you were young,—if you can put something in place of the spelling-school and debating school for society, and the husking bee and the old log-rolling (if any of you are from Indiana you know something about that), you have accomplished a great deal for social life upon the farm.

I might talk to you all day, because on this subject of education I am a crank—and yet I don't mean to say that, exactly. A crank, I have been told, is a man who sees one thing very clearly, and he is generally right about that; but he doesn't see it in its proper relation to other things. I think that is a pretty good definition. I believe I see it in the proper relation, and so I am going to say that I am an enthusiast on this subject of proper education for the boys and girls in Iowa. We have all the lawyers we need, and all the doctors that can make a living. We have more dentists than there are rotten teeth, and more ministers than we can support. But I will tell you that we havn't anything like the number of good farmers that we ought to have. And let me tell you that if you get your boy started up here at Ames, he will come back with different notions. The trouble is to get them up to the point where they can go to Ames. Give them a secondary school where they can start in and lead to this agricultural college of high-class research work. What is the use of maintaining an institution here unless you are going to have a feeder for that, just the same as you have for your State University? Why direct every boy and girl to this cutural school? Let's have some feeders for the State Agricultural College and let them do the work which they ought to do.

The investigation of this great problem of tuberculosis should be carried on. I do want to call your attention to one thing. I think it is quite 2,500 people in Iowa who die from the "white plague" every year. Startling! How many men were killed in the Spanish-American war? What is the tendency of modern thought, and what ought it to be in every line? It is prevention, isn't it? It is not the cure of disease after you get it, but it is to prevent people from getting that disease. And if only ten per cent of the people take it from diseased cattle or diseased pork, we owe it to humanity that we get rid of that ten per cent by means of prevention. Don't say that because this disease is gradually growing all the time you will sit idly by and let it grow, and try to take care of these people after they get it? That is the trouble with us everywhere; we don't go deep enough into these problems. We treat them in a surface sort of way. We do as the physicians do to-day; treat things symptomatically, not scientifically. I think the farmers ought to be interested in this matter to save their stock, but I am pleading now for a larger view. You ought to be interested, and you must be interested in it for the sake of humanity.

Now, gentlemen, I am delighted to have been with you for a little while this afternoon, and I thank you for your very kind attention.

THE PRESIDENT: We have with us this afternoon a gentleman from Ohio, who will address us on the subject, "Silos and Ensilage for Feed Cattle," Humphrey Jones.

SILOS AND ENSILAGE FOR BEEF CATTLE.

HUMPHREY JONES, WASHINGTON COURT HOUSE, OHIO.

Mr. Chairman and Gentlemen of the Association:

I assume that every member of this Association and every man present who is engaged in the stock feeding or stock raising business is engaged in it purely as a business proposition and not in the gratification of any fad or fancy, as we sometimes find in other occupations. I assume further that every farmer that is engaged in that business is prosecuting it for one or the other or both of two principal purposes: first, the profitable conversion of the products of his farm into meat, and second, the upbuilding and conserving of the fertility of his land. And, as has been told you very forcibly here this afternoon, the second purpose, as is going to be appreciated generally, is scarcely less important than the first, because the man who is simply raising crops off his lands and selling them or feeding them to live stock, without any particular view to maintaining the fertility of his land, is not a farmer, but is simply a miner, and it is only a matter of time until his farm will be mined out.

The great source and means of maintaining the fertility of these lands, according to the world's experience in agriculture, is by the handling of live stock. No other means has been demonstrated to be so effective, and this is the method adopted in England and on the continent. However that may be, the condition of sentiment among farmers now is not such that a margin based merely upon maintaining the fertility of the farm will appeal strongly to them; we don't yet fully appreciate the importance of that matter; and if there is anything to be said in favor of the use of ensilage in beef production that will meet with favorable consideration and action upon the part of the average farmer, it must appeal to him as a business proposition, yielding immediate profit to him.

I might say now, in advance of proceeding further, that I assume that you who are interested enough in this subject to have your officers invite some one to come seven or eight hundred miles to speak upon it are not expecting any special plea in favor of any theory, or a mere statement of the use of ensilage in the production of beef; but what you desire is a full and a fair statement of all the material matters relating to it, so that you individually can make up your judgment as to whether or not there is anything of practical value in it for you. If I were merely to tell you the things that are favorable to it, without giving the other side of the question, it might be as misleading to you as an absolute misstatement of fact in reference to it. I therefore want to give you as candidly and fairly as I can all that experience has taught us in reference to the subject.

As I said, the first proposition is as to whether there can be any immediate profit to the farmer and stockmen in the use of ensilage with beef cattle. In order to determine that question we must consider for a moment what the present revenue from the principal cattle feed of this country is, that is, the corn crop. It is told us, and generally conceded, that sixty per cent of the feeding value of the corn plant is in the ear, and forty per cent in the stalk and leaves and the husk. The first inquiry, therefore, should be to ascertain what if any value under present methods of feeding is realized from the corn plant aside from the corn inthe ear.

In Ohio, in our section particularly, four-fifths or more of the corn is cut up and chopped, and either fed in the shock, or husked and the corn and the fodder fed separately. That is a necessity with us, growing out of the fact that oats is not a very profitable crop with us. I suppose it is also your least profitable crop here. It is also true that oats is not so good a crop to use in getting sets of grass as is wheat, and that for the proper sowing of winter wheat a properly cultivated corn-field furnishes an ideal seed bed, if you can get the corn removed so that you can put it in proper condition by working it a couple of inches in depth. With us that fodder is worth, I should say, on an average about eight cents a shock or $1.50 an acre, counting about 19 shocks to the acre. Practically, however, a great per cent of the fodder is not used; it goes to waste. It stands out in the weather all winter, and much of it is burned in the spring. The expense to us of cutting up that corn and handling it after it has been raised, strange as it may seem, is about five times what it costs to raise it. The farmer does not count the use of his equipment of teams and tools, except as he takes it in as a part of his capital stock and charges interest on it. The material thing with the farmer is the cash outlay. The cash outlay for raising that corn is not to exceed $2.00 per acre; in fact, we have hired our corn raised for years at $1.50 per acre. A man at $25.00 a month, in the possession of three good horses and the proper tools, will tend fifty acres of corn in three months' time. That is $75.00. $2.00 an acre would pay $30.00 a month for raising that corn. The corn has to be husked, which costs $2.50 an acre. It has to be cribbed, which costs 50 cents. It will cost you two cents a bushel, ordinarily, either to market or feed that corn. You have the fodder in the field that must be hauled out a little at a time through the winter in the mud, and you can't possibly do that short of $1.00 an acre. So you have $6.00 an acre of a cash outlay, putting it moderately, after you have raised your corn.

Now, you men in the west here cut up probably not more than ten per cent of your corn. The question with you is, what is the value of these stalks in the field? In our country I never knew of stalks selling at more than $1.00 an acre, and probably 50 or 75 cents is all the value there is in them to you. If those stalks are forty per cent of the value of the whole crop, even if you are getting $1.00 an acre for them that is a very small per cent of what they are worth. If corn makes fifty bushels to the acre and you count it worth 40 cents on the farm, there is $20.00 an acre. If the stalks are worth forty per cent of the corn, $13.67 is the value of them, and if you are getting only $1.00 an acre for them you are getting only about one-thirteenth of what they are worth. We in Ohio are feeding our corn out of the shock. If we count the expense that we put on that fodder in order to get it in shape, we would get nothing out of it. We cut it and put it in shock merely for the purpose of getting the land in wheat; the feeding value in it ordinarily would not justify the usual way of handling it.

Putting that corn in the silo gives you the full feeding value. This feeding cattle ensilage is a new thing, and, like many another new thing, some people get very enthusiastic over it and say that all of it ought to be done that way. You must remember that the putting of the corn in the silo is not going to increase the feeding value of it a particle, but it will render the grains more digestible. The food in a large silo is always so hot that you can't hold your hand in it, through the process of fermentation; and it therefore puts the grain in condition so that it is more easily and completely digested. But with a practical feeder of cattle that is not a very material thing. It does not matter if the cattle do waste a great deal of the corn; he has he hogs to gather it up; so there is no increased value in the grain by putting it in the silo, notwithstanding the fact that the steer will digest a larger per cent of it. The only place that the benefit or gain comes in is through getting the full value of the stalks. You do get every pound of that, because the steer will eat it up completely. Our experience covering a period of eight years is that the figure of forty per cent value in the stalks is not too high; in fact, I think it is too low. Practically I believe the feeding value of corn by putting it in a silo is doubled. We have been able to carry twice as many cattle as we could before. Before that we fed with clover hay and shock corn, blue grass, etc., much the same as you men here in Iowa are feeding. It is therefore apparent that there is a great gain in utilizing the whole of those stalks. As the gentlman that preceded me said, the waste in the state of Iowa is simply enormous. Two-thirds of the value of all that you get out of this corn crop is wasted every year, except that there is a distinct advantage in your leaving these stalks on the field. Your land would be reduced in fertility just that much faster if they were taken off, and it will be reduced in value if you cut that corn off and put it in the silo. For that reason, if you leave these stalks there and waste $12.00 or $13.00 per acre every year, it is not an entire waste, but is simply that much less taken off the soil. The ideal way is to feed all of that corn down on the ground, and we endeavor as much as possible to handle the crop that way with cattle and hogs. Whenever you do that you are taking practically nothing off of the land.

The next thing to determine in order to solve the question as to whether there is any profit in it is, how much expense is there going to be in utilizing and saving that $12.00 or $13.00 per acre of value of the corn plant. I told you about the enormous expense in Ohio involved in handling this crop after it is raised. You don't have so much expense here. The principal question with us is whether there is more cash outlay involved in putting the corn in the silo than in handling it as we used to. We have found by experience that it costs much less to handle the corn and put it in the silo than to cut and feed it the other way.

We can put the corn in the silo at an expense of between $4.00 and $5.00 an acre when we do it on a considerable scale. If a man were putting forty or fifty acres of corn in a silo, ne could do it at much less than that. But where you do it on a large scale it involves a great deal of expense outside your regular farm labor and increases the expense of it. After you husk your corn off the stalk, the expense of putting this corn in the silo would all be added. It is simply a question of whether or not the expenditure of $4.00 or $5.00 an acre necessary to put that corn in the silo, by which you would save $12.00 or $13.00 of feed, is a paying business proposition. The statement of that is enough to carry conviction.

If that was all there was to it, everybody would say at once, "We will build silos, for we want to save the whole of this corn crop." It won't be practicable for you in Iowa to all build silos, and you don't want to put the whole of your crop in them. You want first to feed every acre of this corn possible down in the field. You have to have some of this corn to carry your stock through the winter, and you will need to have the roughage also. But you can profitably handle a certain percentage of your corn crop in the silo. On one farm of over 2,000 acres, where we raise an average of 700 or 800 acres of corn per year, we put about two-thirds of it in the silo; that is about all we can profitably handle in that way. The amount each man could put in the silo profitably would depend upon his particular circumstances.

Here are some of the objectionable features with regard to that method of handling the corn crop. It costs money to build silos. If you build them of cement and have gravel reasonably accessible, silos holding 500 or 600 tons can be built reasonably; but the average farmer is not looking for storage. You must have barns ar sheds to feed these cattle in if you are going to feed silage, and it costs money to build them. But I think good sheds will pay, even with the ordinary methods of feeding that we in Ohio and you in Iowa have generally used. When cattle are fed all the corn they can eat, they don't need much shelter; a barbed wire fence is about as good proptection as any shed you could build for them. They want cool air instead of warm air. But if we come, as we must in time, to the methods of feeding that are adopted in the older countries of the world—in England, for instance, where they practically never feed a steer more than eight or ten or twelve pounds of grain, we will have to have these sheds for protection, because the cattle won't get enough heat to keep him warm, after he takes what he will need to make the addition of two or three pounds daily to his flesh. In addition to having the sheds, our experience has taught us that we must have solid bottoms in them, and then there is practically no waste at all with the silage; they will eat every pound of it. You may haul in straw and that will help some, but often conditions arise that the more straw you put in the worse they will get. So we have found that the only practical way is to have solid bottoms in the sheds, and in the lots, too. That means that you must clean out, and that there isn't going to be a pound of waste of manure; and to the man who puts a high value on manure, that is a thing that will recommend itself very strongly. While I think I have a proper appreciation of the value of manure, that is a feature of the silo proposition that does not commend itself to me so favorably, because while you don't lose a pound of that manure, you must haul out more than you haul into the feed lot, and that must be done every day during the winter, and in all kinds of weather conditions. It is the most serious problem that we have encountered in feeding this ensilage to cattle. There is an enormous quantity of it—thousands of loads, and you can't always put it on your fields in the winter time. That means that you must pile it up, and haul it out again on the fields, which means a pretty big bill of expense in the course of a year. But as I say, it would be a thing that would commend itself to the average farmer, especially in the older sections of the country, rather than to constitute an objection to the use of the silo. That expense, however, when you come to figure it down to so much per head on the number of cattle that are involved, does not amount to so much, after all—a fraction of a dollar per head for bedding and taking care of the manure.

This advantage I should have mentioned further in the feeding of this silage: it furnishes you storage right where you need it, if storage is desirable; and the handling of that corn crop after it is in the islo is a very insignificant matter. We usually allot one man to feed 300 or 400 cattle. In feeding some other ways a man would do pretty well if he could feed 75 cattle properly, and the former would do his work easier. This goes a long way toward overcoming this increased expense of bedding and taking care of the manure.

Now as to the results. I can't go into much detail in regard to this matter, but we have found in the experience of feeding all kinds of cattle, from calves to three-year-olds, that we can get as good gains from feeding ensilage as in any other method of feeding that we were ever familiar with. We add to our silage, of course, clover hay or alfalfa. We grow large quantities of that. During most of the time we have added to our corn soy beans cut in with it, because they are very rich in protein. In addition to that we have fed cottonseed meal with the silage, and it is an ideal way to feed it, because cottonseed meal is a thing by which cattle may be injured if it is not properly fed. When sprinkled over the ensilage it is mingled with all that mass of roughage, and you can feed from three to five pounds of cottonseed meal for six months to cattle without any serious effects at all. We advise starting with about two pounds of cottonseed meal, and increasing up toward the end of the period to about five pounds; and with that, without the addition of a grain of corn, we have been able to make gains as rapidly and put the cattle in better finish than we were ever able to do in any other way.

Fifty bushels of corn to the acre will make about ten tons of ensilage as it comes from the field, and about eight tons as it comes out of the silo. There is a weight of about 3,000 pounds of corn in that, which you see is about twenty per cent of the total weight as fed to the cattle; and the steer will eat about fifty pounds a day, which contains ten pounds of corn; and he is getting it in a form that he digests and utilizes every pound. If you add to that two to five pounds of cottonseed meal, all our information upon that matter is that it has a feeding value of about two and one-half times shelled corn; so that if you give a steer five pounds of cottonseed meal, he is getting an equivalent of ten pounds or more of corn, in addition to the ten pounds of actual corn fed in the ensilage. If he digests and utilizes every pound of twenty pounds of corn, either in the form of cottonseed meal or shelled corn, he will do well, if he has all the good roughage he wants. In addition to that, this ensilage puts him in the shape that he is when he is on grass. It is a succulent, cooling food that keeps his hair in the same condition as when he is on grass, and it finishes him up evenly. Our experience has been that they finish up more uniformly on the ensilage than on the dry feed. These gains, as you can see, if they are made as rapidly on the ensilage, hay and cottonseed meal as they can be made in any other way, must be made much more economically, because you are utilizing there the stalk and the leaves and the husks of the corn plant, which, as I have said, counting the corn worth 40 cents a bushel and 50 bushels to the acre, is worth two-fifths as much as the ears; so you are feeding about $12 or $13 worth that you are wasting in the ordinary way of feeding.

Briefly, therefore, it is our experience that the feeding of ensilage to cattle is valuable. It has long been recognized as an indispensable in the dairy, and I could never understand why, if it was good to put fat in the milk-pail, it would not be good to put fat on the back. There is essentially no difference in the process that takes place in the digestive tract.

It would not be advisable for the man feeding 50 or 100 cattle to build such large silos as we build. We build them with a view to accommodating several hundred head of cattle, and we build our sheds in the same way; but I think what can be done with profit upon that scale will be equally profitable upon a lesser scale. We have lands, also, that we don't have any silos on, and we are feeding some cattle by the old methods, so that we have an opportunity for comparison of the different methods. We have not built silos for the reason that it has not been practicable for us to do so, for various reasons that it is not necessary to state here. However, we expect to extend the use of the silo, even if we don't have occasion to extend the cattle-feeding oprations any. But I don't want any gentleman to get the idea that we think every man should build a silo. We would not recommend that every man should build one. There are a good many farmers who already have more feed than they are utilizing. They haven't as much live stock as they ought to keep, and they don't need any silo. If a considerable per cent of the corn crop of Iowa should be put in silos, you could hardly get live stock enough here to eat it. But the time will come when we will have a better system of farming that will have in view the crowding upon these lands of all the stock that can be got upon them, and that will mean, as the gentleman who preceded me said, the application of more system to the business of farming, such as is applied in other business to make them a success. He says ninety per cent of these fellows in the towns fail, and that the men in business in the towns have system. He distinguishes between the business men, and then calls the rest of us farmers! I always did object to that sort of distinction as invidious. A man with a little corner grocery is a business man, but a man with a farm worth $20,000 or $30,000 and having much more invested in live stock, employing men and growing crops and putting them into beef, is not engaged in business; he is a farmer! The business men of the country are the farmers; three-fifths of us are farmers. Three-fifths of all that is added to the wealth of this country comes from business men on the farms. The thing that we are deficient in is just what was pointed out to us this afternoon: system. The business man that runs the little corner grocery or dry-goods store has been forced to apply improverd methods to his business. Why? Because ninety per cent of them fail. That necessity does not exist to such a great extent with the farmer, because he will not starve to death; if he doesn't make anything he will live. But the man who is running a peanut stand or a little grocery will go down if he doesn't make a profit; therefore the necessity exists with him of keeping card systems, watching expenses closely, cutting off the waste and doing everything possible to insure for him a profit. But every farmer ought to do more than merely make a living. He should add to his competence, improve his farm, and make it so attractive that this tide will not be running from the farm to the town, but will be running the other way; and when he fully appreciates the purpose in doing those things he will apply to his business those same exact and careful methods which the business man in town uses.

QUESTION: Do you feed the ensilage all the year round, or just in the winter?

MR. JONES: We feed it sometimes in the summer when the grass is dry, but usually only in the winter. It will keep for two or three years.

THE PRESIDENT: The next number on our program is an illustrated address by Prof. W. A. Cochel of Lafayette, Ind., on cattle feeding.

CATTLE FEEDING.

W. A. COCHEL, LAFAYETTE, IND.

The feeding of beef cattle is almost essential to the extensive method of farming practiced throughout the corn belt, if the productive capacity of the soils is to be maintained. The particular method to be followed should be governed largely by the character of the farm. Where a large portion of the land is too broken for plowing, a system which includes grazing or the production of feeders may be followed with success. When all of the land is adapted to corn and has increased in value so rapidly that it cannot be profitably kept in permanent pasture, then the production of beef cattle for market purposes may not be advisable. Under such conditions the finishing of cattle rather than the production of feeders, should be considered.

The producer's profit will depend upon the breeding, type and quality of the steers, the rate and cost of gain, the value of pasture and feed, the kind of ration fed, the condition of the steers when marketed and the manurial value of feeds used. The feeder's profit will depend upon the margin between the cost of feeders and the selling price of fat cattle, the quality and type of steers fed, their previous treatment and condition when placed in the feed lot, the rate and cost of gain, degree of finish secured before marketing, the kind of ration fed and the gain on hogs following. It is of vital importance to the producer to be able to appreciate the factors which influence the value of feeders in order to obtain the maximum profit from the business. He should be able to recognize good and bad features in order to select breed and produce the most desirable cattle for the feeder. It is equally important .for the feeder to have a knowledge of the factors influencing the value of the different grades of feeders in order that he may buy the kind of cattle which are relatively the cheapest when filling his feed lots.

Whether producing or feeding cattle, the chief aim is to turn large quantities of grain and roughage into a more profitable product, to maintain soil fertility, and to increase the yield of farm crops from year to year. In our work at Purdue Experiment Station we have considered that the labor in marketing crops, as such, is as great as that required in feeding them on the farm, and marketing the stock which has consumed them. If this is true, in Iowa as it is in Indiana, then the feeders who secure the purchase price of their cattle and the market price of feeds consumed from the same of their cattle and hogs, are equally as well off as the grain farmer and has in addition, a vast amount of manure which, if properly handled, will increase his profits from farming through several years.

The quesion of cattle feeding is so broad that an attempt cannot be made to discuss it from every standpoint in our lecture. For this reason I will confine my remarks largely to one phase of the business, that of "Short Feeding." By this term is meant, feeding cattle to a marketable finish in 90 to 120 days. To do so profitably requires the exercise of keen judgment in the selection of feeders, the ration used, the method of feeding and also experience in feeding. As in any other venture it is necessary to start right. The steers used should be mature, fleshy feeders as calves and yearlings will utilize too great a proportion of their feed for growth and not enough for fat to justify giving them a short feed. The quality and type selected should depend upon market conditions at the time of purchase and probable demand at the close of the feeding period. Price being equal the more quality the steers have and the nearer they approach the beef type, the greater will be the profit. If they are to be marketed during the summer and fall, then it is essential that they have quality and type and start in the feed lots in "grass fat" condition in order that they will not come in competition with western range cattle but will sell in a higher grade; if marketed during the winter or spring, then quality and type are not so essential as the market demand for the plain cattle is broader. The illustrations used show various types of cattle used in the feed lots at the Station. The first one is that of a plain steer which was used in a "short fed" lot during the winter of 1906-07. The staggy head and coarseness are objectionable but he illustrates well the type and condition most desirable for short feeding. The second illustration shows a type which does not have sufficient capacity for feed to insure rapid gains while in the feed lot. The third illustration shows a steer which has breeding, capacity and type, but not enough age to be used for short feeding. This steer, though making a gain of 2.63 lbs. daily, required six months to be made prime. The fourth illustration is that of a car load of "short fed" cattle which were exhibited at the International of 1907 and won first prize and championship for "short fed" cattle. A complete record of this feeding is given in Bulletin 130 published by Purdue Experiment Station, Lafayette, Ind. They were ideal steers in every respect for short feeding purposes.

During the past two winters we have fed cattle to determine the relative advantage of short vs. long feeding periods. A great deal of thought was put on the kind of ration that would insure a maximum amount of gain and still not be unavailable or too expensive for practical use. It was decided to use in these tests a ration of shelled corn, cotton seed meal, clover hay and corn silage, which has given us an average daily gain per steer of 3.16 pounds in the "short fed" lot and 2.57 pounds in the "long fed" lot during the first test; of 2.85 pounds in the "short fed" lot and 2.66 pounds in the "long fed" lot during the second test. It would have been impossible to secure such results from a ration of ear corn and timothy hay, shock corn and wheat straw or similar rations which are frequently used throughout the corn belt. The one selected had these points in its favor; it was palatable, succulent and something near a balanced ration and could be available on nearly every farm.

SHORT VS. LONG FEEDING.

	Winter 1906-07		Winter 1907-08	
	Short Fed	Long Fed	Short Fed	Long Fed
Length of period	90 days	180 days	110 days	180 days
Initial value	$ 4.50	$ 4.25	$ 4.50	$ 4.00
Initial weight	1175 lbs.	1010 lbs.	1287 lbs.	1123 lbs.
Daily gain per head	3.16 lbs.	2.57 lbs.	2.85 lbs.	2.66 lbs.
Daily feed per steer:				
Shelled corn	21.19 lbs.	16.66 lbs.	21.67 lbs.	19.01 lbs.
Cotton seed meal	2.74	2.99	2.40	2.70
Clover hay	3.15	3.93	4.53	4.51
Corn silage	15.00	15.01	14.09	14.99
Feed per lb. gain:				
Shelled corn	6.70 lbs.	6.47 lbs.	7.60 lbs.	7.15 lbs
Cotton seed meal	.86	1.16	.84	1.02
Clover hay	.99	1.52	1.58	1.69
Corn silage	4.74	5.82	4.94	5.64
Cost of grain per cwt.:				
Corn at 40c.	$ 6.98	$ 7.59	$ 7. 3	$ 7.91
Corn at 50c.	8.17	8.74	9.21	9.18
Necessary selling price to break even:				
Corn at 40c	$ 4.98	$ 5.29	$ 5.15	$ 5.16
Corn at 50c	5.21	5.66	5.42	5.54
Actual market value	5.35	5.60	5.75	6.70

It will be seen from the table that the "short fed" cattle made the most rapid gain, consumed a greater proportion of grain to roughage, made cheaper gains and required a smaller margin between buying and selling prices in order to break even. In the first test it required 284.7 pounds per head to finish the "short fed" cattle and 463.7 pounds to make the "long fed" cattle equally fat. In the second test 313.5 pounds for the "short fed" and 478.6 pounds for the "long fed" cattle. The amount of corn consumed per head by the "short fed" cattle was 34 bushels in the first test and 41.9 in the second; by the "long fed" cattle 54.6 and 61.1 bushels per head.

This is the result of two years' work at the station and the problem is by no means solved as to the relative profit from the two methods, because the two lots of cattle cannot be sold on the same market. On a stationary market the "short fed" cattle have proven most profitable both years, but from March, 1908, to May, 1908, there was such an increase in cattle values that the "long fed" cattle returned the greater profit. In feeding the ration mentioned during the last two years we have never received less than 18 cents per bushel over market value for the corn fed and it has amounted to as much as 37 cents in one instance. This is more than the average profit in growing the corn and means that cattle fed under similar conditions during the past two years by the corn producers have doubled their profit.

It is to be hoped that further experimentation will throw more light upon this subject, but the data secured indicate that feeding beef cattle is a business that not only demands skill upon the part of the feeder but judgment as to cattle selected for special purposes, the selection of productive and profitable rations and business ability of the highest type.

QUESTION: Was your object in feeding silage to aid digestion?

PROF. COCHEL: We consider it entirely as a roughage.

QUESTION: You stated that you fed shelled corn because it demonstrated the actual weight. Is that the only reason?

PROF. COCHEL: Yes. I think you would get equally as good results by feeding broken ears in the start, until the steers begin to shell their own corn.

We have fed some ground corn, but have not gone quite deep enough into that yet to say whether or not we like it better than the shelled corn. There is a wide difference of opinion in our state, but as near as I can get at it from the feeders, those who have a mill on their place and don't put very much emphasis on the hog end of the deal prefer the ground feed. I have heard a good many of the men say this year that they are going to grind their corn, because it is flinty.

QUESTION: I want to ask Mr. Jones how he builds his silos.

MR. JONES: That matter would constitute an address in itself, and I could only in just a few words tell you what we have done. We build our silos of concrete, with a six-inch wall, reinforced with 00 wire, which is about the size of an ordinary lead pencil, horizontally. It costs about 50 cents per ton capacity.

We don't put the corn in the silo when it will become acid; it should be in the first stage of maturity, and then it is always sweet.

Also you want to get all the feeding value possible in the corn plant before you cut it, and the solid matter is put in the plant most rapidly during the last two weeks of its maturing period.

QUESTION: What method do you use in your silos for jambs and doors?

MR. JONES: We set frames in the cement and make the openings to them, one above the other—about four of them. We build our silos 50 feet in height; they are ordinarily built 20 or 30 feet. We have one that is 36 feet in diameter; others that are 26 feet. We don't roof them at all. Always make your lowest door high enough so that you can drive a wagon into it. Build a square chute over these doors, so that when you throw the silage out of the top door it drops right down into the wagon.

QUESTION: How would the corn fodder that is cut up and standing in the shock today compare with ensilage for feeding?

MR. JONES: It does not compare with it; they won't eat it all. After the stalks are dry they get hard and woody; and if you chop them up they will get crosswise in the cattle's mouths and make them sore, and it is not satisfactory.

QUESTION: What kind of molds do you use for building your silos?

MR. JONES: One silo we build by making a permanent inside mold out of flooring boards and using sheets of strip-iron 28 inches in width, then fill it.

QUESTION: What proportions do you use?

MR. JONES: About one of cement to eight of gravel.

Heretofore there has been one great objection in regard to these silos, viz.: that the silage will mould around the wall. That will occur with ordinary cement silos, but we prevent it by simply coating the inside of the silo with coal tar or asphaltum. It doesn't have to be renewed oftener than every two or three years.

We have one round barn of 150 feet diameter with a circular feed box. The barn has an open court of about 100 feet with a shed extending all around it about 25 feet.

QUESTION: In building small silos for 30 head of cattle would you advise a cement silo?

MR. JONES: Yes, but I would build them high and narrow.

The joint meeting thereupon adjourned.

PART IV.

PROCEEDINGS

STATE AGRICULTURAL CONVENTION.

December 9, 1908.

Convention called to order by the President of the State Board of Agriculture, C. E. Cameron, who appointed the following committees:

Committee on Credentials: H. L. Pike of Monona county, J. H. Harrison of Lyon county, and John Mullan of Pocahontas county.

Committee on Resolutions: W. M. Clark of Marshall county, W. P. George of Story county, and C. F. Sauerman of Jasper county.

Vice-President Brown was called to the chair and the President made the following address:

PRESIDENT'S ADDRESS.

Another year has rolled around and blessed Iowa from an agricultural standpoint, not only in good crops but good prices. With this great harvest from the farms, when the yield in some places has fallen below the average the price has more than made up. The Iowa State Fair and Exposition was also blessed with large exhibits in all departments and the attendance greater than any year in the history of the association. We certainly can congratulate ourselves upon the fair of 1908, as the Hon. James Wilson, Secretary of Agriculture, who attended the fair this year stated that it was the greatest agricultural fair ever held in the United States, and he says that means the world. That certainly is encouragement, coming from a man occupying the position he does, and I think he has done more for agricultural interests of the United States than any man who has occupied the position he now holds.

There was a large increase in the number of campers upon our grounds this year. This feature of the fair seems to be gaining favor in a great many sections of the state and is a feature which should be encouraged, for it is a pleasant outing, not only for the farmer, but for any one who wishes to take a week's vacation. We had upon our grounds this year close to five thousand people who took advantage of this way of attending the fair. The cost is very small, as one can rent a tent and have the same put up and taken down; all that is necessary to bring from home is sheets and pillow cases. If the increase continues in the next five years as it has in the last five years, there will be ten thousand campers on the grounds, as the fair is fast becoming one of the great educational institutions of the state, if not now.

I would like to see erected on the grounds a cottage from every county in the state where the people of a county could register and meet their friends. Of all the buildings that have been erected upon the Iowa State Fair Grounds in the last few years, none have called out so many favorable comments as the new Administration Building that was built this year. It not only throws all the offices of the fair together, so that anyone wishing to go from one department to another can do so without traveling all over the grounds, but the building with its large rotunda and its commodious porches was a mecca for all the people attending the fair. The placing of new buildings for the future has become a great problem with the directors and officers of the fair, and in every new building that has been erected in the last few years they have figured from the increase in the past and judged by the same increase in the future that they were building large enough to meet this increase; but they have found themselves mistaken. The fair in the last few years has been coming with leaps and bounds, until today we have had more people on our grounds in one day than the total attendance for the entire week a few years ago. To illustrate the increase of entries in our stock departments: Two years ago we asked the legislature to build a swine barn, to cover three acres of ground and hold three thousand hogs. Some of the legislators thought we were crazy, wanting a building to hold three thousand hogs; "you will not fill it in twenty years," they said. But they were convinced that we did need a building of that capacity, and so built it. What was the result the first year the building was occupied? that was in 1907; we could not accommodate all the hogs. And this year, after cutting down the number of pens each exhibitor might have, we turned away close to one thousand hogs. And in every department of the fair they were taxed to the limit to take care of the entries.

There are several buildings that the fair needs at this time—machinery, dairy, etc. But the most needed building at this time is a new, absolutely fire-proof grand stand, capable of seating from twelve to fifteen thousand people. It seems cruel to see from five to eight thousand people standing in the hot sun all afternoon to try and see some of the amusement features of the fair. They are not standing there from choice, but from the fact that they are unable to procure a seat in the grand stand.

I have not gone into the financial conditions of the fair of 1908, as that will be brought out by the secretary, Mr. Simpson, in his report, and in behalf of the members of the board and officers of the Iowa State

Fair and Exposition I want to thank the people of Iowa for their interest and loyalty to the fair, for it is their fair and they have made it.

MR. PRESIDENT: I take pleasure in presenting to you Mr. Simpson, who will now give the report of the Secretary for 1908.

SECRETARY'S REPORT.

Once again it becomes my duty to present a report to the annual State Agricultural Convention.

The stability of Iowa's great resources was never more apparent than during the past twelve months. The panic in the late fall of 1907 was felt to a greater extent in the states to the east and south than in Iowa. This was followed by extremely dry weather during the past season, which in many sections became quite a serious problem for the farmers late in the summer and early fall, reducing the yield of farm crops very materially. During all this period Iowa has stood out promiently as a bright shining star. The panic affected less the farmers and the industries of this state than in any other section of the country. Again, while the farmers in the eastern and southern states were praying for rain, the annual harvest in Iowa and the maturing corn crop gave evidence of a normal yield, with prices somewhat higher. Considering the conditions throughout the country for the past twelve months, the 26th day of November was in reality a day of thanks for Iowa people. The work of the Department of Agriculture has been carried on in the best possible manner with the limited means available under the present statute. In the introductory of the Iowa Year Book of Agriculture for 1907 was set forth some additional requirements for the department to enable it to carry on the work in a more efficient manner. This introductory included our recommendation for a larger support fund and amendments to existing laws granting authority to the Department to issue bulletins from time to time containing such information and statistics as would be of interest to the public. This would include the issuing of special bulletins after the annual gatherings of the Iowa Swine Breeders' and the Iowa Dairy Associations. At the close of the institute season another bulletin should be published giving a condensed statement of thier work for the past year, suggestions for programs and management of institutes, and other information helpful to institute workers —making the bulletin meet the demands as they would present themselves. Still another bulletin should be issued with special reference to the workings of the stallion law, giving a revised list, by counties, at least once each year, of the stallions upon which state certificates had been issued. This would aid in carrying out the provisions of the law by placing a copy of said bulletin in the hands of every owner of a pure bred stallion, who would be on their guard to report any violations. A bulletin at the close of the season for the holding of county and district fairs would be useful to all connected with the management of said fairs, as well as the patrons. Other bulletins might be added on special subjects, as may be deemed wise for the purpose of promoting agricultural production and agricultural education. At present the only authorized medium of the Department for the dissemination and publication of statistics, papers or other data is through the annual Iowa Year Book of Agriculture. As can readily be seen, much of the material contained in the Year Books is published out of season, and, in some instances, a year after it should be given to the public.

If the publication of bulletins is authorized by the next general assembly the time for printing the Year Book could be changed from annually to biennially, and the number of copies to be printed increased to five thousand, or more, if necessary. The saving in the cost of printing the Year Book would go a long way toward paying for the printing of the special bulletins.

STATISTICS ON FARM CROPS AND LIVE STOCK.

I would suggest a change and addition in the present statute with reference to the collection of agricultural statistics. As the law now stands, the assessors are required in each odd-numbered year to record statistics as to the acreage of certain farm crops for the preceding year. Such reports are now made to the secretary of state for publication in the official register. The law should be amended, first, to include in addition to farm crops, statistics on live stock and such other information as may be obtained relative to agriculture, agricultural production, acreage, and agricultural labor within each township, same to be collected annually and reported to the office of the Department of Agriculture upon blanks to be furnished by the secretary of the State Board of Agriculture. We believe the proper channel for the disseminating of all agricultural statistics should be through the State Department of Agriculture. This is in conformity to similar methods followed in other states, and is a step in the right direction for making the work and reports of the various departments of agriculture in the various states more uniform.

AGRICULTURAL EDUCATION.

The work of the Association of American Agricultural Colleges and Experiment Stations and American Association of Farmers' Institute Workers in their effort to perfect a better organization of extension teaching in agriculture is to be commended. At the meeting at Baton Rouge, Louisiana, in November, 1906, the committee from the agricultural colleges and experiment stations made the following recommendation: "(1) That each college represented in this association organize as soon as practicable a department of extension teaching in agriculture, co-ordinate with the other departments or divisions of agricultural work, with a competent director in charge, and if possible, with a corps of men at his disposal * * *. (2) If in case of any agricultural college this step is at present impracticable, we would recommend most strongly that the college appoint a faculty committee on extension teaching in agriculture."

We are pleased to report that the first session of the Iowa legislature following this meeting a bill was enacted providing for agricultural extension work by the Iowa State College of Agriculture and Mechanics Arts and providing an appropriation therefor. The next, or Thirty-second, general assembly showed their confidence and appreciation in the importance of this work by making the appropriation annual and increasing the amount thereof. As a result of this college extension work there has been organized throughout the state in various counties a number of "short courses" for instruction in agriculture, dairying, stock judging, domestic science, etc.

The American Association of Farmers' Institute Workers are directing their efforts for the establishment of "movable schools of agriculture." The statement of the committee in making its report gives in a very concise manner the object of these schools in the following words:

"The institutes, at least in the United States where they have been longest conducted, have brought the majority of the country people to appreciate the value of the truths that agricultural science has to teach. The next duty, therefore, is to demonstrate the practicability of imparting these truths with sufficient particularity, adaption and extent to be of substantial benefit to the working farmer in increasing his earing power.

The movable school promises to provide such a demonstration. It deals with a single item or subject in agriculture, and it deals with it both in a theoretical and in a practical way. It explains the theory and then teaches by doing. * * * *

The movable school is first of all a carefully prepared course of study extending over sufficient time to teach the subject thoroughly and render the student familiar with the practice work which the course prescribes. It is given to classes regularly organized and limited in number, whose members agree to complete the course. It is equipped with all the apparatus, books, and material needed for presenting the subject in a most thorough manner, and is conducted by a teacher who is an expert in expounding and illustrating the theory of the subject and in directing the practical features of the study. The students are men and women of mature years, and of experience in the direction in which the instruction is to be given, having sufficient preliminary education to enable them to understand and participate intelligently in the requirements of the course."

The form of organization for movable schools of agriculture is set forth in circular No. 79 from the U. S. Office of Experiment Stations, issued under date of October 24, 1908.

INSTITUTES.

Farmers' institutes were held in eighty-three of the ninety-nine counties of the state during the last fiscal year, an increase of five over the previous period. It is known that in two counties reporting no institute, short courses were held, thus increasing the number to eighty-five, leaving only fourteen counties in which neither institutes or short courses were held.

Fifty-nine hundred and fifty-five dollars was paid out through the state auditor's office to the institutes in the last period, an increase of four hundred dollars over the preceding year. In the competition for the exhibit of corn by the county farmers' institutes or corn clubs at the last State Fair the Polk County Farmers' Institute was awarded first prize, $100.00; second to the Packwood Corn Club of Jefferson county, $50; third to the Story County Farmers' Institute, $25.00; fourth to Dallas county, $15.00, and fifth to Warren county, $10.00.

The statute relative to the manner of filing reports from farmers' institutes should be changed, providing for the filing of such through the office of the Department of Agriculture upon blanks sent out by the secretary, and said reports to be filed on or before May first of each year. This would then give ample time for the publication and distribution of farmers' institute bulletins mentioned previously in this report before the opening of the next institute season.

ADVERTISING IOWA'S RESOURCES.

The census report taken for the year 1905, as you will remember, showed that there had been practically no increase in the rural population of Iowa since the last report was made, but, on the other hand, in certain townships and counties an actual decrease was reported. People were generally amazed at that statement of facts and quite curious to know why the increase in our rural population had so suddenly stopped. Many reasons were advanced by various persons endeavoring to explain this cause. The arguments presented were in some instances quite plausible, but in our opinion they did not follow along the lines responsible for this situation. If a merchant expects to keep pace with his competitors he must keep up a thorough and systematic campaign of advertising, laying great stress and playing up strongly any bargains he has to offer. The breeder uses every legitimate means of keeping his herd or flock before the public by taking advertising space in the press, issuing catalogs, and in the show ring. He feels that he must advertise to let his brother breeder know what he has. The manufacturer never loses an opportunity for keeping his output before the consumer; he lets the world know what he is doing by *advertising*. Did it ever occur to you, my dear friends, that the foundation of all our industries was builded upon that one little word "advertising"? Let the manufacturer, breeder or merchant cease advertising and the effect is at once noticeable in the sales. If advertising then is so essential to the successful carrying on of trade, why should not the State of Iowa advertise to the world the opportunities for the further development of her great resources? We should not only seek to encourage immigration of desirable citizens to Iowa, but endeavor to point out to our native citizens the mistaken idea that they must emigrate to other sections of the country to better their conditions. The time has arrived when the gospel of truth should be spread broadcast. portraying in a decisive manner the advantages of citizenship in Iowa. It is time to lay the foundation and to begin a thorough and systematic campaign of advertising with the ultimate object of increasing by twofold our rural population. Thousands of dollars are expended annually by other states, railway companies and real estate men in getting out attractive literature to attract immigration. Thousands have gone from Iowa, and thousands of others have passed through our state in seeking their new location. Attractive literature has played no small part in the scramble for immigrants. The next Iowa general assembly should provide a fund that the advertising of Iowa's great resources and opportunities could be properely put before the world.

COUNTY AND DISTRICT FAIRS OF IOWA.

New features of educational importance are gradually becoming a part of the program at many of the county and district fairs. At one county fair held in Iowa the past year a very instructive exhibit of noxious weeds was made; at another a tuberculin hog was exhibited by the state veterinarian's department, showing all the diseased organs. Judging contests are becoming more numerous. An exhibit from the schools of the county or district is gaining a place in the premium list classification at many of the fairs. The report of the amount of cash premiums paid would indicate a larger and more diversified exhibit was made. The number of fairs reporting as having paid out over one thousand dollars in cash premiums increased from eight in 1907 to thirteen in 1908, with Marshall County fair leading with $1,841.00. The others follow:

2.	Union District, Muscatine county	$1,579.00
3.	Kossuth county	1,227.00
4.	Columbus Junction District, Louisa county	1,211.00
5.	Wapsie Valley, Linn county	1,185.00
6.	Tipton District, Cedar county	1,160.00
7.	Henry county	1,159.00
8.	Buena Vista county	1,101.00
9.	Jefferson county	1,080.00
10.	Clinton county	1,075.00
11.	Davis county	1,039.00
12.	Clinton District	1,036.00
13.	Jasper county	1,017.00

Sixty-eight thousand dollars are shown as paid out in premiums by the eighty-nine fairs reporting, and the total valuation of fair ground property figures up to $615,000.00, or an average of about $7,000.00 for each plant.

IOWA STATE FAIR AND EXPOSITION.

It was just fifty-four years ago last October that the first Iowa State Fair was held at Fairfield, on a ten-acre lot enclosed with a rail fence ten feet high. The state owes a tribute which it never can pay to the public spiritedness, energy and hard work shown by the small band of gentlemen who conceived the idea of organizing and holding an annual state fair for the purpose of showing the products of soil and factory, and resourcefulness of the breeder, to encourage and advertise the great opportunities open to the settlers within the borders of this great commonwealth. The inspiration for the holding of a state fair was gathered from our brothers in Illinois, they having organized the Illinois State Fair the previous year. Thus from this humble beginning the fair has expanded and increased its educational possibilities until today it is recognized as the greatest annual exposition in the world from the standpoint of exhibits and attendance from the rural districts. There are one or two other fairs where the attendance greatly exceeds that of Iowa, but no other can approach in the number and quality of her live stock, farm implements, vehicle and machinery exhibits.

I know it has become quite monotonous to remark "the fair promises better than ever", or that the last one was bigger and more successful than any before; but what else can I say at this time than to tell the truth. Not only was the attendance the largest in the history of the fair, but the exhibits and number of exhibitors greatly exceeded those at any previous exhibition. Over thirteen thousand entries were recorded by the fourteen hundred exhibitors, and thirty-nine thousand dollars in cash prizes distributed to about nine hundred of the fourteen hundred exhibitors. Of the five hundred remaining exhibitors not receiving premiums, three hundred and twenty-five were entered in departments where no cash prizes were offered, leaving less than two hundred, or only about eighteen per cent of the total number of exhibitors, who received no cash premiums. This tells the story of the keen competition presented by the exhibitors in the various departments.

Never in the history of any state fair was a larger number or better quality of horses, breeding cattle, sheep and swine led into the show ring for the judges to pass upon than at the last Iowa State Fair and Exposition. The aggregate number of breeding animals entered was fifty per cent larger than the entries for the great International Live Stock Show which closes at Chicago tomorrow. It is true that they had about seventy more entries of breeding cattle, but the entries of horses, sheep and swine at Iowa exceeded those at the International. The total number of individual entries was substantially as follows:

	Iowa State Fair and Exposition.	International Live Stock Show.
Breeding cattle	820	888
Horses	765	628
Sheep	600	550
Swine	2275	None
	4460	2066

Go where you will among the breeders and exhibitors of pure bred live stock and you will hear them prasing the exhibit of stock at the Iowa State Fair and Exposition. They will also tell how highly a ribbon won in competition at this annual show is prized by the exhibitor. With this large exhibit is it any wonder that a judge is sometimes bewildered and at a loss to know where to tie the ribbons. At that there is far less friction and complaint of the judging of stock at the Iowa Fair than at any of the other big shows. Four hundred and fifty exhibitors represent the number of breeders participating in the great stock show at the last fair.

The magnitude of the exhibit of farm implements, machinery, vehicles, fencing, labor saving tools, and devices of all kinds and makes is incomprehensible to any one who did not visit the fair. Three hundred and twenty exhibitors occupied space in this department and showed everything from a tin pail to a silo, from a wire stretcher to a wire making machine, from a ball of binding twine to a machine for making same, from a cream separator to a threshing machine, from the smallest gasoline engine to the largest traction engine, and about one million or less other articles not herewith mentioned. A conservative estimate of this exhibit could be placed at one million dollars. The manufacturer not only places his goods on exhibition, but calls in his large corps of experts to instruct and explain the workings of his machine. It is the only place where the dealer or consumer can make a personal inspection of the various makes of machines, vehicles, or labor saving tools, as it may be, without a great loss of time and needless expense. It is becoming quite common now to hear the remark by some farmer who wants a new potato digger, gasoline engine, grain drill, pulverizer, or other new piece of machinery, that he expects to wait until he can look over the various makes exhibited at the state fair. Rarely does a day or week pass that we do not receive a communication from some farmer asking for the name and address of the manufacturer or dealer who exhibited some article in this department which attracted his attention and which he is now ready to buy. That is a part of the educational feature of the fair; exhibits in all departments are of equal educational value. In the dairy department will be found the cream separator, churn, ice cream freezer, and other manufactured articles for use of the farmer and dairyman. In the poultry department will be found specimens of birds that help to make the profits from the poultry industry of Iowa run into the millions each year. It is really too bad that a suitable building of sufficient size to properly arrange and show the magnificent display of plants and cut flowers is not available. The beauty of this exhibit is practically lost by reason of inadequate and inappropriate quarters.

The number of exhibitors and entries in the various departments of the Iowa State Fair and Exposition follow:

Department.	Number of Exhibitors.	Number of Entries.
Horses	88	1,157
Cattle	82	1,085
Swine	224	2,505
Sheep	26	619
Poultry	67	776
Agriculture	107	884
Farm implements and machinery	319	....
Pantry and apiary	91	1,351
Dairy	115	115
Horticulture	28	1,046
Floriculture	19	207
Fine arts	225	3,336
	1,391	13,081

Every effort was made by the management to provide a high class and pleasing amusement program. Some little criticism was heard in regard to charging admission for the evening show in the stock pavilion by those who thought it should have been free. Had no admission been charged no show would have been given. The receipts, with a packed house every night, barely paid the expense. The show was provided to take care of the overflow from the ampitheater at night and to further provide additional entertainment for those desiring it. Indeed, the receipts for the whole amusement program are but slightly in excess of the expenditures. It is not the purpose or intention of the management in arranging the amusement program that it will be a source of revenue in excess of its cost, but to merely provide such diversification from the daily program as the public demands.

The attendance this year was practically 208,000, showing an increase of about twenty-one per cent over the previous pear. This increase can primarily be attributed to the loyal support of the country, city and agricultural press, for never in the history of the state fair had it received the support accorded it by the press as during the past season. Many thanks are also due to the business organizations of this city that worked so faithfully for the success of the fair. To Secretary Botsford of the Des Moines Commercial Club and those associated with him, the people of Iowa owe a vote of thanks for the assistance they rendered in securing from the railways the rate which had always been granted previous to 1907, viz.: three cents a mile for the round trip from any point in Iowa. There is still room for a greatly increased attendance. There is no reason why the Iowa State Fair should not equal or exceed the annual attendance at the Canadian National Exhibition at Toronto, which reached the three-quarter million mark the past season. While it is true that the annual exhibition at Toronto is the only one of importance in eastern Canada, still, with the population of Iowa, the annual attendance can easily be brought up to thribble what it was this year. Before this can be accomplished, however, the state must provide proper and adequate equipment to shelter the exhibits and facilitate the handling of the crowds. In only one or two respects does the National Exhibition at Toronto exceed. It has the most modern and up-to-date buildings of any of the great fairs, and more of them. The exhibit of manufactured articles in process of manufacture at Toronto equals that shown at some of our national expositions. The showing of live stock, however, is small compared to that of Iowa. In Iowa we have built up a great exposition and exhibit, but it is only a question of how long she may continue to grow and hold her exhibitors unless the state quickly recognizes the needs of the fair and provides more liberally for additional equipment.

IMPROVEMENTS.

There was expended for improvements at the State Fair Grounds the past season fifty-eight thousand, three hundred dollars. This added to the forty-one thousand four hundred dollars expended in 1907 brings the amount for improvements in the past two years, from the receipts of the Fair, to ninety-nine thousand seven hundred dollars. In the five years preceding 1907 improvements to the amount of ninety-nine thousand were made from fair receipts, bringing the total amount expended on improvements at the State Fair and Exposition Grounds to one hundred ninety-eight thousand seven hundred dollars within the past seven years, every dollar of which came from fair receipts. In that same period appropriations to the amount of one hundred and fifty-nine thousand dollars were made by the Twenty-ninth, Thirtieth and Thirty-second General Assemblies, for the erection of the stock pavillion, agricultural building and swine barn. It can readily be seen by this statement of facts that no small amount of work for the betterment of the State Fair and Exposition is annually made from the net profits of the fair. To the equipment there was added the present year an Administration Building, the second section of the proposed horse barn, extension to the electric light and power plant, new walks laid and improvements to streets continued, the remodeling of old buildings to better suit the purposes for which they must be used, and many other improvements of a minor nature.

The following table shows the amounts expended for permanent improvements within the past seven years:

	From moneys taken from fair receipts.	From moneys appropriated by the general assembly.	Total amount permanent improvements.
1902	$26,400.00	$37,000.00	$63,400.00
1903	18,000.00		18,000.00
1904	12,600.00	47,000.00	59,600.00
1905	12,000.00		12,000.00
1906	30,000.00		30,000.00
1907	41,400.00	75,000.00	116,400.00
1908	58,300.00		58,300.00
Total	$198,700.00	$159,000.00	$357,700.00

NEEDED ADDITIONAL EQUIPMENT FOR THE STATE FAIR AND EXPOSITION GROUNDS.

We hardly know where to begin, or stop, in mentioning the many needed improvements before the grounds is adequately equipped to properly shelter the exhibits and handle the crowds, or in keeping with the pace set by other states in building up their state fairs. At the Canadian National Exposition at Toronto more money was used in the construction of an amphitheater than the State of Iowa has all told put into buildings at the State Fair grounds. The plant at that place is now valued at approximately one and one-half million dollars. The State of Ohio places a value of one million upon their state fair grounds; they have no buildings but what are constructed of steel, concrete and brick, and are annually adding to the equipment. Illinois has a grounds with improvements of even greater value than Ohio. In Missouri, the youngest of the galaxy of state fairs now maintained by all of the best states, in the seven years of its existence they have set the pace in the construction of buildings and other equipment by constructing fire-proof buildings. Over five hundred thousand dollars has been appropriated by the Missouri legislature for buildings since its establishment seven years ago.

In Iowa we need:

First. An amphitheater of fire proof construction, with a capacity of not less than fifteen thousand.

Second. Additional land that will permit of the removal of the race track, giving more room where most needed.

Third. A building or shed for the shelter of farm implements and machinery.

Fourth. A manufacturers' and liberal arts building in place of the old fire trap of an exposition building.

Fifth. An appropriation for the completion of the show pavilion for swine, left unfinished for lack of funds from the last general assembly.

Sixth. A dairy and horticultural building.

Seventh. Sewer system.

Eighth. Additional equipment and machinery for the extension of the electric light and power plant.

Ninth. Sheep barn, and completion of the horse and cattle barns.

Tenth. A large auditorium for the holding of gatherings and meetings of farmers, breeders, etc.

And so I could go on indefinitely. A part of these improvements will be made in the future, as in the past, from the state fair receipts, but all of the larger buildings must be provided here, as elsewhere, with funds appropriated by the state legislature. At a meeting of the State Board of Agriculture tomorrow these matters will be taken up and some action taken with reference to recommendations to be made to the Thirty-third General Assembly.

FINANCES.

As will be shown by the statement following, the department had at the opening of the fiscal year, December 1, 1907, a cash balance of $35,327.90. The total receipts from all sources during the year were $143,027.61, bringing the total credits to $178,355.51. Of the receipts for the year $138,764.66 came from the fair, and $4,262.95 from other sources. The net increase of receipts from the last fair showed a gain of thirty-three per cent over that of 1907—in dollars and cents amounting to exactly $34,407.91. Of this amount $24,350.00 was received from increased ticket sales, $6,285.00 additional revenue from concessions, $1,762.00 increase in the amount of entrance fees in the speed department, and the balance made up of a net increase of receipts in the various departments; but one department showing a decrease over 1907. Premiums aggregating $38,744.56 were paid; an increase of $3,239.77, or about ten per cent, over 1907. The net expense for the 1908 State Fair was $94,539.21; the net profit was $44,191.45. The Board anticipated over $23,000.00 of the net profit, which was expended for improvements. Our statement shows a cash balance of $25,328.73 at the close of the fiscal year, November 30, 1908. From this, however, must be deducted the balance still due on contracts for the past year, amounting to $4,715.36, plus unpaid warrants of $381.39, amounting in all to $5,096.75; thus leaving a net balance to profit of $20,231.98.

So far as we have been able to ascertain, there is but one other state fair showing larger receipts than Iowa, this being Minnesota. The Texas and Michigan State Fairs show larger receipts but work under an entirely different plan. At both of these pool and liquor privilege is sold. The Texas Fair runs two weeks; has from twenty-five to forty bookmakers working, who pay from one to two hundred dollars per day for the privilege; has racing on three Sundays, when the attendance is universally larger than upon any other day; and a bar occupies most of the space under the amphitheater (this also being the case at Detroit.) This will explain why certain other fairs show larger receipts than Iowa. However, the time is coming, and very quickly, when these concessions will be excluded from such exhibits.

STATEMENT OF ACCOUNT.

RECEIPTS AND DISBURSEMENTS, IOWA DEPARTMENT OF AGRICULTURE, FOR THE FISCAL YEAR ENDING NOV. 30, 1908.

RECEIPTS.

Cash balance Dec. 1, 1907		$ 35,327.90
From rentals and miscellaneous collections by the Superintendent of Fair Grounds	$ 1,309.09	
From state appropriation for insurance	1,000.00	
From interest	862.85	
From fees, division of horse breeding	1,054.00	
From miscellaneous receipts	37.01	4,262.95
By receipts from 1908 Iowa State Fair and Exposition:		
From entry fees, speed department	6,079.10	
From sale of exhibitor's tickets	2,614.00	
From sale of forage	4,362.15	
From various live stock breeding associations for special premiums	1,700.26	
From revenues in concession department	20,259.71	
From stall rentals, stock departments	3,144.10	
From rental of light and power	394.95	
From rental of space in machinery, agricultural dairy and women's departments	4,686.85	
From miscellaneous sources	628.09	
From sale of tickets	94,895.45	$138,764.66
		$178,355.51

DISBURSEMENTS.

To expense warrants paid by Treasurer:		
Issue of 1907 and former years	$ 7.19	
Issue of 1908 and former years	114,340.72	$114,347.91
To premium warrants paid by Treasurer:		
Issue of 1907 and former years	122.00	
Issue of 1908 and former years	38,556.87	$ 38,678.87
To cash balance Nov. 30, 1908		25,328.73
To balance disbursements		$178,355.51

STATEMENT OF EXPENSE AND PREMIUM WARRANTS ISSUED DURING THE FISCAL YEAR ENDING NOV. 30, 1908.

Improvement and repairs:			
Water system		$ 10.00	
Extension of electric light and power plant		1,834.30	
Streets		999.04	
Walks		278.69	
Second section of horse barn		10,221.91	
Administration building		31,648.76	
Trees and shrubbery	$ 68.63		
New roofing	415.50		
Resoiling race track	114.60		
Painting	629.32		
Hardware	478.65		
Lumber	316.22		
Moving old buildings	320.00		
Sewers	293.22		
Amphitheater	230.45		
Turnstiles and exits	130.10		
Sheet metal work	220.91		
Ticket offices	51.00		
Score board	40.00		
Remodeling poultry building	871.76		
Fixtures for post office	40.00		
Horse barns	2,388.66		
Furniture for dining hall	295.45		
Grading	380.60		
Stock pavilion	103.55		
New tools, implements and vehicles	233.20		
Miscellaneous	1,048.97	8,670.99	$ 53,663.69
Expenses other than for improvements of fair:			
Insurance		1,670.00	
Fair grounds maintenance		1,509.00	
Expenses committee on noxious weeds		17.13	
1907 bills paid in 1908		151.38	
State Farmers' Institute and Agricultural Convention		175.27	
Board meetings		757.70	
Clerk hire		360.00	
Miscellaneous		334.60	4,975.08
Expense State Fair and Exposition of 1908:			
Postage		703.50	
Advertising		7,485.63	
Meetings of executive committee		584.75	
Expense special committee work		1,065.04	
Express, telegraph and telephone		313.32	
Printing		1,961.15	

Expense State Fair and Exposition of 1908—*Continued.*

Forage	4,423.03
Clerk hire	3,034.95
Music and amusements	14,888.45
Privilege department	963.08
Light and power department	1,370.94
President's department	98.20
Ticket department	316.15
Police department	2,379.18
Treasurer's and ticket sellers' department	1,144.23
Admission department	2,397.91
Speed department	621.90
Horse department	920.85
Cattle department	783.86
Swine department	576.75
Sheep and poultry department	365.75
Implement and machinery department	389.70
Agricultural department	610.75
Dairy department	276.45
Horticultural department	134.35
Floricultural deparment	75.00
Women's department	620.30
Judging contest	50.65
Rest cottage and hospital	68.55
Auditing committee	68.30
Dues American Association of Fairs and Expositions	35.00
Lumber	65.94
Pay rolls for labor and miscellaneous work	3,047.05
Water rental	191.59
Decorations and flags	417.95
Photograhs	72.00
Janitor service	161.50
Refund of admissions	6.25
Freight	37.91
Supplies	441.61
Rental of tents	387.75
Map of grounds	18.30
Premium badges	610.17
Planting and cultivating flowers	408.42
Scavenger work	277.50
Team work	563.29
Premiums paid by expense warrants	313.00
Laundry work for hospital	4.65
Fencing	96.10
	$ 55,848.65

Premiums paid:

On horses	$6,046.00		
On cattle	8,848.26		
On swine	3,168.00		
On sheep	1,939.00		
On poultry	795.50		
On agricultural products	2,932.50		
On pantry and kitchen products	756.50		
On dairy pdoducts	602.00		
On fruits	860.50		
On plants and flowers	815.80		
On art and fancy work	1,786.50		
On speed racing	9,360.00		
On scholarships	500.00		
On winter corn exhibit	334.00	38,744.56	94,593.21
			$153,231.98

Mr. President: We will now listen to the report of the Treasurer, Mr. G. S. Gilbertson.

TREASURER'S REPORT.

To the Directors of the Iowa State Board of Agriculture:

Gentlemen:—I present herewith report of receipts and disbursements for the year ending November 30, 1908, as follows:

RECEIPTS.

Received from G. D. Ellyson, Treasurer		$ 35,327.90
Received from gate receipts (day general admissions)	$ 71,725.50	
Received from gate receipts (evening general admissions)	1,403.50	
Received from amphitheater receipts (day)	7,777.00	
Received from amphitheater receipts (evening)	5,830.50	
Received from amphitheater reserved seats	2,286.75	
Received from quarter stretch tickets	875.50	
Received from live stock pavilion tickets	3,562.70	
Received from campers' tickets	1,434.00	94,895.45
Received from Supt. Horticulture and Agriculture.		415.00
Received from Supt. Swine Department		1,179.00
Received from Supt. Sheep and Poultry		355.10
Received from Supt. Horse Department		712.00
Received from Supt. Fine Arts		2,357.00
Received from Supt. Dairy Department		724.35
Received from Supt. of Grounds		1,309.09
Received from Supt. of Grounds for Electric Light Rental		394.95
Received from Supt. Cattle Department		898.00

Received from Supt. of Machinery Department...	1,190.50
Received from Supt. of Privileges..............	20,259.71
Received from Secretary	18,337.46
	$178,355.51
December 1, 1908, Balance on hand.............	$ 25,328.73

DISBURSEMENTS.

Paid expense warrants	$114,347.91
Paid premium warrants	38,678.87
Balance on hand..	25,328.73
	$178,355.51

Respectfully submitted this 9th day of December, 1908.

G. S. GILBERTSON,
Treasurer.

REPORT OF AUDITING COMMITTEE OF THE DEPARTMENT OF AGRICULTURE, FOR THE YEAR 1908.

To is Excellency, Hon. Warren Garst, Governor:

In compliance with the instruction of the Executive Council, we as a committee duly appointed to examine the books of the Department of Agriculture for the year 1908, as provided by section 1657-a, Supplement to Code of 1897, beg leave to report that we have examined the vouchers for warrants drawn, and compared the same, and examined the accounts of money received into its treasury, a detailed account of the same being attached, and made a part of this report. Your committee find that no warrants have been drawn except on duly authenticated vouchers which are on file duly numbered with warrant number. We also commend the secretary of this department, for efficiency of the system of bookkeeping in vogue in his office.

A. H. GRISELL,
C. W. HOFFMAN,
J. C. FLENNIKEN.

CONDENSED FINANCIAL STATEMENT OF THE IOWA STATE DEPARTMENT

Showing Receipts and Disbursements of Iowa State Fair and Other Sources and Net Profit of Fair for Each

Year	Receipts							
	Cash balance beginning of year	In reserve fund	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total	Premiums paid
1896	$ 116.79	------------	$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11	$ 16,404.29
1901	28,616.55	------------	50,712.91	1,000.00	2,753.82	54,466.73	83,083.28	19,203.83
1902	34,244.93	$ 12,000.00	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70	21,736.31
1903	30,372.25	15,000.00	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60	23,813.13
1904	28,963.11	15,000.00	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50	24,691.68
1905	29,657.23	15,000.00	84,786.25	1,000.00	2,840.92	88,627.17	118,284.49	28,730.89
1906	39,976.34	15,000.00	110,929.85	1,000.00	3,717.16	115,647.01	155,623.35	31,703.94
1907	50,294.87	15,000.00	104,356.75	76,000.00	5,452.34	185,809.09	236,103.96	35,504.79
1908	35,327.90	15,000.00	138,764.66	1,000.00	3,262.95	143,027.61	178,355.51	38,744.56
Totals	------------	------------	$ 678,574.05	$ 174,000.00	$ 26,827.07	$ 872,401.12	------------	$ 224,129.13

OF AGRICULTURE FOR YEARS OF 1896, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908

Expenditures, Together With Amount Expended for Improvements, Repairs, etc., and of the Years Named.

Disbursements							Profits of Fair		
Other fair expenses	Improvements and repairs	Disbursements other than for fair	Total for year	Cash on hand	Previous year's business or outstandi'g warrants	Grand total	Total receipts of fair	Total expenses of fair	Net profits
$ 15,351.06	$ 7,471.95	$14,019.88	$ 53,247.28	$ 152.84	------------	$ 53,400.12	$ 36,622.10	$ 31,807.35	$ 4,814.75
13,925.87	13,378.73	2,313.44	48,821.87	34,244.93	$ 16.48	83,083.28	50,712.91	33,129.70	17,583.21
20,073.34	63,457.12	2,608.69	107,875.46	30,372.25	118.99	138,366.70	63,084.71	41,809.65	21,275.06
21,989.56	17,855.77	1,704.83	65,363.29	28,963.11	25.20	94,351.60	59,838.56	45,802.69	14,035.87
28,485.42	59,641.11	3,195.43	116,013.64	29,657.23	14.63	145,685.50	66,100.36	53,177.10	12,823.26
34,408.62	11,963.09	3,345.27	78,447.87	39,976.34	139.81	118,284.40	84,786.25	63,139.51	21,646.74
40,315.60	30,035.33	3,385.87	105,440.74	50,294.87	112.26	155,623.35	110,929.85	72,459.39	38,470.46
43,647.20	116,459.05	5,043.03	200,654.07	35,327.90	176.19	236,103.96	104,356.75	79,151.99	25,204.76
55,848.65	53,663.69	4,975.50	153,231.98	25,328.73	381.39	178,355.51	138,764.66	94,593.21	44,171.45
$258,694.26	$366,453.89	$26,522.06	$875,848.92	----------	------------	-----------	$715,196.15	$515,170.59	$200,025.56

Mr. President: We have with us this morning a gentleman from Ohio whom I know is competent and well qualified to talk to you upon the subject assigned him. I know that the gentlemen who were at the fair managers' meeting last night were pleased with the address he made, and it is with pleasure that I introduce to you Mr. A. P. Sandles.

THE PURPOSE AND FIELD OF STATE FAIRS AND EXPOSITIONS.

HON. A. P. SANDLES, COLUMBUS, OHIO.

What I say to you this morning I don't want you to call a speech. I am just going to talk to you a little while. In fact, I don't want you to call it a speech for a very good reason; for the same reason a little boy gave his grandma one time. Johnnie was slding down the baluster one day and grandma saw him. She said, "Johnnie, you must not do that; I would not do that." Johnnie said, "No, grandma, you couldn't." And that is one of the reasons why I am not going to make a speech and just want to talk to you a little while.

I am certainly glad to come out here to Iowa. When I received a letter from Mr. Simpson I could not resist it. I don't know who could resist Simpson. You know the railway conductors always say they shed tears when John gets off the train. I honestly believe if John was bald-headed he could go out and sell hair restorer. He has been so active and is one of the main spokes in the wheel in our association known as the American Association of State Fairs and Expositions at Chicago. I know him so well that, as I say, I can hardly resist him. I am glad to come out here on this occasion. I have been interested in agriculture all my life; in fact, I was born in a log house close to the poor house; that is why I am poor. I am what is known as a farm product, home-grown and hand-spanked.

I am quite sure you know that Iowa is far in the lead in this work and your state fair has won distinction; it is in the front rank. And your agricultural college at Ames is another institution that is making Iowa famous. Sometimes these things at home, these men and women at home, don't get the full appreciation they should have and go somewhere else. We are somewhat inclined to think that the good things are away over yonder; that is not true, the gold is right at your feet. I say that this institution at Ames is one of the engine rooms of the nation; it is going to drive back the darkness and drive us on to progress. This report of the department of agriculture which was read to you this morning I am sure must be a great source of gratification to all of you. Do you know that the statesman, the philosopher and the scholar are all agreed and sing the praises of agriculture and those who plow and farm the earth. It is only the cheap politician who fails to give full weight to agriculture it ought to have. In Ohio about three or four years ago we had a governor elected and a legislature who forgot about the farmers and agricultural interests and ignored these interests and appropriations and the very laws asked for by the people. When the next election came along that governor was defeated and the complexion of the legislature almost changed. The farmers in my state, and I suspect it is true in this state, pay one-half of the taxes. Why shouldn't they have their share of the distribution? After that election they woke up and discovered that they were like the lighting bug. You know someone has said:

"The lightning bug is a brilliant thing,
But the insect has no mind,
So it goes on stumbling through the world
With its headlight on behind."

That about is what happens to the men who fail to give full credence to agriculture. There is no other occupation that means so much to the welfare of this nation as agriculture. Gibbons said "Agriculture is the foundation of commerce." George Washington said, "Agriculture is the most useful, the most important of all occupations." What was true then is true now. Andrew Jackson said, "Agriculture is connected with every other interest of the country and is superior in importance to them all." And so the historian, the scholar, and the statesman have given the credit that belongs to agriculture. Did you ever go to Washington and visit the great Congressional Library building? You will be astonished at the magnificence and magnitude. As you go inside, the beauty and magnitude dawns upon you and you unconsciously take off your hat, and the respect grows into reverence. All that man could do to make the building splendid and wonderful has been done. As you go up one of the spacious stairways you see one of the most wonderful and remarkable pictures on the wall known as the "Mosaic Minerva." The remarkable thing about it is that it is made all of little blocks of marble; every feature, eyes, nose, mouth, etc., are worked out in these little blocks of marble. Minerva, Goddess of Wisdom. She is holding in the left hand a scroll on which is inscribed the names of the arts, professions and occupations—law, theology, medicine—but above all, and first of all, is the one word "Agriculture"; it leads all the rest; the second just below is "Education." My friends, it seems to me that this great artist must have had the true conception of what it takes to build up a commonwealth. Agriculture and education are indeed necessary.

As I said, I feel timid about coming out to this state where you are doing such great work and have so many eminent men. When I come in my weak way I feel just a little like one of the men in a story told by Mr. Hoar of the United States Senate: One was a very large man and the other a very small man. The quarrel between them became so intense that finally the large man challenged the little man to fight a duel. That gave the little man the choice of weapons, and he chose guns. This gave the little man an advantage because he would have a larger mark to shoot at. They finally compromised by having the little man stand up in front of the large man and a friend marked off his size and shape on the big man; then he was to shoot inside that mark, nothing outside was to count. So if what I say does not come up to your expectations, don't count it; it is outside of the chalk.

I believe the mission of the state fair is to encourage better agriculture. I believe it will induce men to mix brains with their work and sweat. I believe it will urge them to better efforts, more intelligent farming, more intelligent breeding, and if it does that it will accomplish a great purpose. Don't you know it is more profitable to raise good animals than it is to raise the scrub, the plug? As I said to you last night, a first class animal seldom has a second class owner. When you improve the breed you also improve the race of man who breeds these animals. Our agricultural experiment stations work in the field of research and investigation. They find out truths and scatter them broadcast. You learn their results; but suppose you don't put them into action in your everyday life, it won't do you much good. The state fair is the place that shows who has learned his lesson best and can deliver the goods; it is the comparison of ideas and results. As was said last night by our friend from Ames: The first time he went out with his cattle he thought he had the best there was; but when he got there and found his neighbor had so much better stuff he was discouraged, but he had new ideas. The fellow who never goes out imagines he has the best there is and is likely to be bigoted and stuck up. It is a good thing for everybody once in a while to be worsted. If everyone in this world could have just one half of what they would like to have they would have more than their share, wouldn't they? The state fair is one of the best places I know of to take the conceit out of men. If they think they have the best just let them go to the state fair; they will soon find out they have not. There is no better way to let the people appreciate what a great state you have than to come to the state fair. They see what other places or states are doing and think more of it. This business of agriculture, raising corn, wheat and live stock, is a breeder of patriotism as well. You know when you give a man a home, a fine house and fine animals of every kind, that man is a patriot. You know when this country has needed volunteers that the farm boys have come along and helped take care of "Old Glory" and kept the stars in the flag. Agriculture is a breeder of patriotism. Agriculture, the state fair, our farmers' institutes, our judging contests, our experiment stations, are all educators, and that is indeed the greatest purpose of the state fair. The state fair is the one place that teaches to distinguish what man, what brains, what push and energy can accomplish. I wish everybody in the state of Iowa might read that splendid address made by President McKinley at the Pan-American Exposition at Buffalo, the day previous to his assassination. To Americans and American institutions he pays a noble tribute. He said, "Fairs and expositions are the timekeepers which mark the progress of nations. They record the world's advancement. They stimulate the energy, enterprise and intellect of people and quicken human genius. They go into the home. They broaden and brighten the daily life of the people. They open mighty store-houses of information to the student. Every fair or exposition, great or small, has helped to some onward step. Comparison of ideas is always educational, and as such instructs the brain and hand of man." History does not tell of a single fair or exposition during the dark ages. Point out the states and nations that have done most in fostering fairs and expositions, and I will show you the nations that have gained supremacy in the commercial world. If China could have one good fair like you have, or like one of our world's fairs, it would do more to waken up that sleepy old empire than anything else that could happen. It costs money, but good things do cost money. Somebody has said that it costs more to live today than ever before. But it is worth more, isn't it? Costs money, yet my good friends we are willing to pay for good things. Over here is Russia with only three cents per capita for education; but Russia, greatest in area, greatest in numbers, stands before the world today humiliated by the little island of Japan. We would not trade with Russia. Someone has said, "If you educate a boy you will have an educated man. Educate a girl and you educate a whole family." I believe we heard last night about these classes in judging. That is splendid; that makes strong men and helps push this state along. I understand that you have a great corn country out here; I know you have, and corn is a wonderful crop and means so much to you. The corn crop in this country in 1906 was a little more than three billion bushels, while the rest of the world produced less than one billion. If that great corn crop could be loaded in wagons, forty bushels to the load, drawn by a team of horses, and started out it would reach six and one-half times around the world. That is the magnitude of the corn crop in this country every year. If this procession would proceed in a straight line, the first wagon would be one hundred and fifty thousand miles away before the last one started. According to the increase in population in this country, by 1950 we will have more than two hundred millions of people in this country. We do not produce more than one-half enough to feed that many now. It is our business to find out how we can raise more corn on one acre of ground next year than we do this, more wheat on one acre of ground. We must know how to feed these people. When people are hungry is when they form mobs and defy the law. J. J. Hill made a wonderful address at the Minnesota State Fair Grounds. He pointed out some of the things, and it was a remarkable speech, the facts and data he had gathered and put into that speech. It is startling almost how we are wasting our natural resources and our forests. Our fine state fairs can show us how to improve the breeds, people coming together showing the products of the soil. If this will help us to preserve the fertility of the soil and keep the fields from becoming barren, the state fairs will have a great purpose.

On the banks of the River Rhine stands a castle, the scene of many gatherings. On the walls of this castle hang three pictures, each of which tells a story. The first is that of a soldier, in his hand a musket, and just below is the inscription, "I fight for all." We need the soldier to save this country when it has to be saved. The next picture is that of a priest arrayed in ministerial garb, in his hand the Bible, and just below is written, "I pray for all." We need somebody to help us keep the way. The third picture is that of a man in the field at work, in his hands a hoe, and on his brow the sweat of honest toil, and just below is the inscription, "I feed them all." My good friends, that is a cheering message, but the man has to keep on toiling, sweating, and working because after all that is the corner stone of this matter. The man who drops a grain of corn into the ground and persuades it to germinate and materialize has both feet resting on the corner stone of his nation.

I think the U. S. Report of Agriculture shows the greatest average yield of corn ever had in this state was in 1906, 39.5 bushels, the highest average reported by the U. S. Department of Agriculture. That department has its crop reporters scattered all over the state. The lowest you ever had was in 1901, 25 bushels; that seems to be the minimum report by the department and 39.5 is the highest. In 1906 the greatest corn year was reported by the Department of Agriculture in the United States; the average all over the United States was 30.3, a rather low average. Out in Ohio Mr. Simpson had no respect for my feelings and told what a big fair you have. I am going to get back on him now. In 1906 Ohio had the greatest corn yield per acre in the United States, 42.6 bushels. We feel very proud of that. Of course that was one great year for corn. But now the lowest average ever reported by the U. S. Department of Agriculture in any state is down in South Carolina, where they had only 6.9 bushels in 1901; a very low average. While that is the lowest average reported by the Agricultural Department, yet it was down in South Carolina that the world's record was made for raising corn on one acre of ground. The American Agriculturalist, a farm paper published in New York City (You can write the editor and get an affidavit as to these facts if you don't want to believe me) can give you the facts on how this acre was fertilized, etc. A prize of $500 was offered for the person raising the most corn on one acre of ground. The offer was made a year or more in advance so that the ground might be prepared and put in proper condition, and this man Drake, of Marlborough county, won the prize. This is, as I say, the world's record; it shows the extreme possibilities. After that corn was shelled and weighed it made 254 bushels and 49 pounds. I am giving you my authority, because you might think like Bill Nye said one time. He and a friend got to talking and telling stories, and Bill said, "My friend, I think there are three big liars in this town. I think I am one of them and you are the other two." Perhaps you think I am all of them, but that is the recorded result, sworn to. It shows what is possible when the ground is nourished, fertilized, cultivated. The matter of expense was not considered; the main or whole question was how much corn it was possible to raise on one acre. In Iowa 39 bushels is the best you have ever done. If this state fair in any way will educate the farmers to raise that average it is worth while. The average yield the first half of the last ten years was 23.8 bushels per acre. That is the average corn crop of the whole United States per acre. That same report shows that the last five years of the ten year period had increased to 27.4 per acre. That is an average increase of 3.6 bushels per acre in the last ten years. That is encouraging. And that report shows that one hundred millions of acres are cultuivated to corn in the United States every year; and that increased average means 3.600,000 bushels of corn more each year that we are raising. Corn at fifty cents per bushel; that means about $180,000,000, the increased amount of wealth we get from that increased average. It is lots of money, and if the state fairs, agricultural colleges, experiment stations, farmers' institutes, and corn shows are adding that much every year, then it is worth while to keep them up and maintain them. You are justified in asking the members of your legislature to help you, are you not? It don't cost anywhere near that sum to maintain these institutions. When our state legislatures appropriate money to promote the welfare of these institutions, and to make more thorough these investigations and researches, that money will bring more than one hundred cents on the dollar, and when you show it is a good investment your people will not object to a slight increase of taxes. People don't object to taxes if they get value received. Someone has said taxes are worse than death. Death comes only once but taxes come every year. The farmer is almost as unfortunate in this as the man:

"Whose horse went dead and his mule went lame,
And he lost his cows in a poker game;
Then a hurricane came one summer day
And blowed the house where he lived away.
Then an earthquake came when that was gone
And swallowed the ground the house stood on.
Then the tax collector he came round,
And taxed him up with the hole in the ground."

In this matter of corn raising, my friends, it is a good investment to mix brains with your work. In Pennsylvania they had a Jersey cow that sold for $11,500.00. That is a hundred acre farm with the hide on. In Ohio we have a big bee farm and one queen bee sold for $100.00. That is an acre of dirt on the wing. That shows that great interest is being taken. It shows that some people are getting interested in their business. An ear of corn was sold at Ames for $150.00 The ear weighed nineteen ounces, selling at the rate of $9,000.00 a bushel, which is a hundred acre farm in a bushel basket. I heard a gentleman from Ames telling the other day about ten ears of corn having won $7,000.00 in prizes. That is about $700.00 for an ear of corn. You can get more inspiration when a man goes to a fair and gets a prize. If a man can beat his neighbor that is enough glory; it is an honor and distinction of winning this prize. I like a man who has ambition. The fair ground is a great battle ground. That is where neighbor and friend come in and try to conquer by skill. The man who does these things counts for more in the long run. These men on the broad prairies of Iowa will do more to keep "Old Glory" floating than those gamblers down in Wall Street. We are a great big neighborhood, that is all. You may think you are doing your duty and that it is no concern of yours what someone else is doing. But we must keep up this good work. You may keep your premises clear, but supposing your neighbor allows a cesspool on his premises and that pool breeds a fatal disease? It may be that your children will be contaminated first; that mourning will hang on your door before it will hang on his. So it is of some concern to you what others are doing. This country of ours is a great big field; the state is a great big neighborhood; and the conditions all over the country do concern you and you must have in your heart a desire to help your country and make your fellowmen better. I believe agriculture is the foundation of commerce. When granaries are full prosperity smiles; when depleted it frowns.

Sometimes we hear about the boys leaving the farm. We often hear it discussed how to keep the boys on the farm. I don't know the solution, but I do know that when the farm boy can do himself and his country more good by leaving the farm he has my permission to go. This intellectual farming is going to do a whole lot of good for this country. When you come to ask your legislature to help you I don't believe they will refuse any of your just demands. You ought to have your share of the taxes paid in. What right has any set of men to refuse to give to those who produce what they ask.

I expect I have talked long enough. I want to wish everybody well in this state. You have good live men out here; I think everyone of you are live wires. I am not sure I said it last night, but I think every one of you can swim upstream; you are independent. In the east you are becoming famous as becoming independent fellows. Count one. Do something. Be not only good, but good for something. This education that is going on is going to be the salvation of this country. We have men who in their mad race for gold would sacrifice almost everything; they don't care for the people on these broad acres. They have little conception of what it takes to make a great country or a great state. John D. Rockefeller's income is $60,000,000.00 a year; $1.90 every time the watch ticks; $114.00 every minute. I suspect that is more than his share. I suspect that that is evidence that some place he has had special favors or something like that. My good friends, it is not all you ought to do to plow, sow and farm. You want to pay some attention to your public affairs. It is a good thing when you find out about some of these things going on to just take a day off and raise another kind of crop—raise hell with those fellows. About ten tons to the acre is all right.

I want to call your attention to this: In our state the farmers are getting tired of just having garden seed sent to them. They see all these things going on and hear about the congressmen down at Washington. Our farmers' institutes are passing resolutions that they don't want garden seeds. What they want is just and more favorable laws in the interest of agriculture. $250,000.00 is spent buying garden seeds of favored companies, usually left over from last year; $260,000.00 to $270,000.00 to rairoad companies to take these though the mail. Suppose they give your state fair $10,000.00 to help agriculture, or to colleges for giving lectures. Would not that do more good? I am not sure they want to do so much for the farmers as for these favored companies.

Another thing I want to call your attention to. The postmaster general last summer at a meeting of the Northeastern Postmasters' Association complained about some of the things in the postoffice department. Here is one of them: I don't know whether you people are in favor of the parcel post, but you can't have it; they won't let you have it, and there are as many reasons why you can't have it as there are express companies. You can get a copy of that address; it is splendid and full of information. He said if you want to send a one pound package from one town to another, take it to the postoffice and Uncle Sam will charge you one cent an ounce. If some foreigner would come up to that same postoffice window and want to send a four pound package across the ocean he could send that same package for one-half cent an ounce; not five miles, but five thousand or twice five thousand miles. That is the condition we are up against today. If you want to send a package weighing four pounds and one ounce they won't take it. The foreigner can come up with a package weighing eleven pounds and Uncle Sam will take it across the seas. They do something for these foreigners that they won't do for their own people. It is all right to take a shot at such things once in a while It is all right for you to let your congressman know about it. It is your business to know something about politics. Just look up the definition of that word politics. It means public affairs; how to conduct the business of the town, township, county or nation. Follow up these things that support your agricultural colleges; raise more per acre on your land next year, and prosperity will come to you and it will be worth while living here. I am an optimist. I believe in looking on the bright side of life. In an art gallery is a picture whose face from one side looks like a frown; on the other side the lights and shadows so fall that a pleasant smile wreaths the face. It is a noticeable fact that those who go to see this picture linger longer on the side of the smile than on the side of the frown.

"'Twixt optimist and pessimist
The difference is droll;
The optimist sees the doughnut,
But the pessimist sees the hole."

Worry is what kills people. Look on the sunny side of life. Go back to the farm and take a new hold. Today is better than yesterday, and tomorrow will be better still. I am one of those fellows who would rather see Santa Claus than to see a king. A hearty handshake is worth while. I am glad I came out here. I hope next year your wheat will make good flour, and the flour make good bread; that your hogs will make good pork. And if you ever come to Ohio I hope you will look me up. I don't know that I have said very much that will do much good, but I do know that your state fair is worth while. Stand by it; go back home and boost it. It is a good thing, and the suggestions made by your secretary and president are good. The very fact that you are asking for amendments to the law is a good sign that you are not satisfied with past conditions. I hope God will bless all of you and the devil miss all of you.

AFTERNOON SESSION.

THE PRESIDENT: We will listen to the weather and crop report of Dr. Geo. M. Chappel. I take pleasure in presenting to you, for the first time, I think, Dr. Geo. M. Chappel, Director of the Weather and Crop Service.

(Note—Dr. Chappel's report in full appears in Part I of this book.)

DR. CHAPPEL: I would suggest that some action be taken by this Board to have the township assessors in making their assessment next year, or, if too late, the next year, include in their reports the minor items in farm production (alfalfa, pop corn, etc.), so that we will have a basis to figure on.

The Committee on Credentials submitted the following report and on motion of Mr. Grisell of Guthrie county the report was adopted and the committee discharged:

REPORT OF COMMITTEE ON CREDENTIALS.

Your committee on Credentials beg leave to report as follows:

Section 1657-d of the Code Supplement sets forth what organizations are entitled to representation and voice in the annual state agricultural convention as follows:

"There shall be held in the capitol on the second Wednesday of December, 1900, and annually thereafter, the state agricultural convention, composed of the state board of agriculture, together with the president or secretary of each county or district society entitled to receive aid from the state, or regularly elected delegate therefrom accredited in writing, who shall be a resident of the county; and in counties where there are no agricultural societies the board of supervisors may appoint a delegate who shall be a resident of the county. The president or an accredited representative of the following named associations shall be entitled to membership in said convention, to-wit: the state horticultural society, the dairy association, the improved stock breeders' association, the swine breeders' association, and each farmers' institute organized under the provisions of section 1675 of the Code. Provided, said farmers' institute has been organized at least one year, and has reported to the state secretary of agriculture not later than November 1st, through its president and secretary or executive committee, that an institute was held according to law, the date thereof, the names and post office addresses of its officers. They shall also furnish the state secretary of agriculture with a copy of program of each institute hereafter held and one or more papers read before such institute, if papers are read. On all questions arising for a determination by the convention including the election of members of the board, each member present shall be entitled to but one vote, and no proxies shall be recognized by the convention."

Your committee finds that eighty-four delegates have presented credentials and are entitled to a vote in the proceedings of this convention. Credentials have been presented from the following named organizations which have not complied with the law as set forth in the section just read in regard to filing report with the secretary of agriculture and are therefore not entitled to representation at this meeting:

Warren County Farmers' Institute;
Monroe County Farmers' Institute;
Boone County Farmers' Institute;
Cerro Gordo County Farmers' Institute.

DELEGATES FROM COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.

Adair County Agricultural Society	A. C. Savage, Adair
Audubon County Agricultural Society	G. W. Hoover, Audubon
Buena Vista County Agricultural Society	A. L. Denio, Alta
Calhoun County Fair Association	C. G. Kaskey, Manson
Cass County Fair Association	Ed. Berg, Atlantic
Northern Iowa Agricultural Society	D. M. Arthur, Mason City
Strawberry Point District Agricultural Society	J. C. Flenniken, Strawberry Point
Clinton County District Fair Association	Carl J. Skinner, Clinton
Davis County Agricultural Society	H. C. Leach, Bloomfield
Floyd County Agricultural Society	John Waller, Charles City
Grundy County Agricultural Society	H. N. Dilley, Grundy Center
Guthrie County Agricultural Society	A. H. Grisell, Guthrie Center
Hancock County Agricultural Society	Jas. Manuel, Britt
Hardin County Agricultural Society	H. S. Martin, Eldora
Henry County Agricultural Society, Mt. Pleasant	H. Arnold, Mt. Pleasant
Victor District Agricultural Society	J. P. Bowling, Victor
Jackson County Agricultural Society	Ed. Phillips, Maquoketa
Jasper County Agricultural Society	C. F. Sauerman, Colfax
What Cheer District Agricultural Society	F. H. Beeman, What Cheer
Kossuth County Agricultural Society	A. R. Corey, Wesley
Lyon County Fair and Agricultural Society	J. J. Harrison, Rock Rapids
Madison County Agricultural Society	T. J. Hudson, Winterset
Lake Prairie District Agricultural Society, Pella	Chas. Porter, Pella
Marshall County Fair Association	J. B. Claussen, Green Mountain
Monona County Fair Association	Geo. Holbrook, Onawa
Union District Agricultural Society, West Liberty	J. L. Peters, W. Liberty
O'Brien County Agricultural Society	J. B. Murphy, Sutherland
Shenandoah Fair Association	Chas. Aldrich, Shenandoah
Big Four District Fair Association, Fonda	R. F. Beswick, Fonda
Poweshiek County Central Agricultural Society, Malcom	James Novak, Malcom
Poweshiek County Central Agricultural Society, Grinnell	Sam'l Jacob, Grinnell
Sac County Agricultural Society	W. L. Stum, Sac City
Shelby County Agricultural Society	L. H. Pickard, Shelby
Tama County Fair Association	E. Mericle, Toledo
Creston District Fair Association	W. W. Morrow, Afton
Forest City Park and Fair Association	V. A. Jones, Forest City
Winneshiek County Agricultural Society	E. J. Curtin, Decorah
Worth County Agricultural Society	Nels Thorson, Northwood
Wright County Agricultural Society	Sam Nelson, Clarion
Inter-State Live Stock Fair Association, Sioux City	F. L. Eaton, Sioux City

DELEGATES FROM FARMERS' INSTITUTES.

Buena Vista County	S. R. Haines, Storm Lake
Cherokee County	George Clarke, Cherokee
Clinton County	J. W. Coverdale, Elwood

Dallas County	Geo. M. Fox, Dallas Center
Decatur County	C. M. Akes, Leon
Franklin County	N. E. Ferris, Hampton
Guthrie County	S. J. Reed, Guthrie Center
Hancock County	Jno. W. Schwack, Stillson
Polk County	Geo. Swartfager, Ankeny
Marion County	W. H. Simpson, Knoxville
Mahaska County	A. J. Lytle, Oskaloosa
Monona County	H. L. Persons, Onawa
O'Brien County	R. J. Morehead, Paullina
Shelby County	W. M. Bomberger, Harlan
Story County	W. P. George, Ames
Union County	L. Day, Afton

DELEGATES FROM COUNTIES WHERE NO FAIRS WERE REPORTED

Dallas County	Geo. M. Fox, Dallas Center
Decatur	C. W. Hoffman, Leon
Des Moines County	Clarence Murphy, Burlintgon
Emmet County	Chas. C. Heer, Armstrong
Franklin County	T. W. Purcell, Hampton
Greene County	Albert Head, Jefferson
Howard County	Geo. Judd, Riceville
Ida County	B. M. Hester, Ida Grove
Lucas County	D. C. Johnson, Derby
Monroe County	N. S. Graham, Albia
Palo Alto County	C. H. Beckwenn
Polk County	Lou Burnett, Des Moines
Wapello County	H. R. Baker, Eldon

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Fourth District	R. T. St. John, Riceville
Fifth District	S. B. Packard, Marshalltown
Sixth District	T. C. Legoe, What Cheer
Seventh District	C. F. Curtiss, Ames
Eighth District	John Ledgerwood, Osceola
Ninth District	M. McDonald, Bayard
Tenth District	O. A. Olson, Forest City
Eleventh District	H. L. Pike, Whiting

The Committee on Resolutions made the following report which, on motion of Mr. Clark of Marshall county, was adopted:

REPORT OF COMMITTEE ON RESOLUTIONS.

STATE AGRICULTURAL CONVENTION.

Dec. 9, 1908.

Your Committee on Resolutions submit the following report:

We congratulate the people of Iowa on the excellent management of its Agricultural Department and commend the officials for the unparalleled success of the 1908 fair.

The extensive exhibits of fruit and corn at this meeting fully maintains the high standard heretofore reached and demonstrates the wisdom of the department in its work along educational lines.

We extend our hearty thanks to the faculty of the college at Ames for the assistance given the farmers of the state in the Short Course meetings, farmers' institutes and other organizations working for the advancement of the farming and stock breeding industries of the state.

Our thanks are due and hereby tendered to the Thirty-second General Assembly and especially to Senator B. W. Newberry for the passage of the pure food bill, stock food, agricultural seed bills, pure paint, drug and twine laws; also for the interest manifested in the investigation of bovine tuberculosis and noxious weeds.

We heartily commend the recommendations of Secretary Simpson for a larger support fund and would ask the Thirty-third General Assembly to so amend existing laws that the Department of Agriculture may be enabled to issue bulletins from time to time containing such information as would be of interest to agricultural, stock raising, dairying, and other allied interests of the state. We would urge upon the legislature the amending of existing laws so that the statistics on live stock and other information relative to agriculture, agricultural products, acreage and labor, by townships, can be collected and distributed annually through the Department of Agriculture.

We extend our thanks to Hon. A. P. Sandles of Ohio for his interesting and instructive address before the convention.

The present accommodations for the proper care and display of stock and farm products at the State Fair are inadequate and require enlargement in nearly every department, Therefore be it,

Resolved, That it is the sense of this convention that liberal appropriations should be made by the Thirty-third General Assembly for the erection of an amphitheater, a manufacturers' and liberal arts building, a dairy and horticultural hall, and for such other buildings as the society may require.

Resolved, That we commend the efforts being made to stamp out bovine tuberculosis and recommend that actual and thorough work be continued along the lines already laid down.

Respectfully submitted, (Signed) W. M. CLARK,
C. F. SAUERMAN,
W. P. GEORGE.
Committee on Resolutions.

Mr. President: Next in order will be the election of the following officers: President, Vice-President, Members of the Board from the Second, Fourth, Sixth, Eighth and Tenth Districts. The following are appointed tellers for the election of officers: Nels Thornson of Worth county, T. W. Purcell of Franklin county, and J. W. Coverdale of Clinton county.

Vice-President Brown took the chair and called for nominations for President. Mr. Denio of Buena Vista county placed in nomination Mr. C. E. Cameron of Buena Vista county to succeed himself, and moved if there were no other nominations that the rule be suspended and the secretary authorized to cast the entire vote of the convention for Mr. Cameron. Seconded by Mr. St. John. Motion prevailed. Secretary so cast the eighty-four votes for Mr. Cameron. Mr. Cameron resumed the chair and thanked the convention for the unanimous election.

President next called for nominations for Vice-President. Mr. T. W. Purcell of Franklin county nominated Mr. W. C. Brown of Wright county to succeed himself, and moved if there were no other nominations that the nominations be closed, the rule suspended, and the Secretary authorized to cast the entire vote of the convention for Mr. Brown. Motion prevailed and the Secretary so cast the vote for Mr. Brown for Vice-President for the ensuing year.

Nominations for Member of the Board from the Second District were called for, Mr. Ferris nominated C. W. Phillips of Jackson county, and moved that the rules be suspended and the Secretary authorized to cast the eighty-four votes of the convention for Mr. Phillips. Motion prevailed. The Secretary so cast the vote and Mr. Phillips was declared elected Member of the Board from the Second District for the ensuing two years.

Nominations for Member of the Board from the Fourth District were called for. Mr. Judd of Howard county nominated R. T. St. John of Mitchell county to succeed himself. Mr. Flenniken of Clayton county placed in nomination E. J. Curtin of Winneshiek county. A ballot was taken which resulted as follows: St. John, 18; Curtin, 66. Mr. Curtin having received a majority of the votes cast was declared duly elected Member of the Board from the Fourth District for the ensuing two years.

For Member of the Board from the Sixth District, Mr. Nowak of Poweshiek county placed in nomination T. C. Legoe of Keokuk county, and moved if there were no other nominations that the rules be suspended and the Secretary instructed to cast the entire vote of the convention for Mr. Legoe. Secretary so cast the vote and Mr. Legoe was declared elected Member of the Board from the Sixth District for the ensuing two years.

Nominations for Member of the Board from the Eighth District were called for. Mr. Hoffman of Decatur county nominated John Ledgerwood of Clarke county and moved if there were no other nominations that the rules be suspended and the Seretary instructed to cast the entire vote of the convention for Mr. Ledgerwood. Motion prevailed, the Secretary so cast the vote and Mr. Ledgerwood was declared elected member of the board from the Eighth District for the ensuing two years.

For Member of the Board from the Tenth District, Mr. Mullan of Pocahontas county placed in nomination O. A. Olson of Winnebago county, and moved if there were no other nominations that the rules be suspended and the Secretary instructed to cast the entire vote of the convention for Mr. Olson. Motion prevailed. Secretary so cast the vote and Mr. Olson was declared duly elected Member of the Board from the Tenth District for the ensuing two years.

Mr. Graham of Monroe county offered the following resolution:

> *Resolved,* That it is the sense of this convention that the so-called free seed distribution by the government should be discontinued, and that we recommend and urge our representatives in congress to use all reasonable means for the discontinuance of the same.

Motion prevailed and the resolution was adopted.

On motion the convention adjourned.

C. E. CAMERON, *President.*
J. C. SIMPSON, *Secretary.*

PART V.

SYNOPSIS OF PROCEEDINGS
OF
STATE BOARD OF AGRICULTURE
AND
COMMITTEE MEETINGS
1908.

EXECUTIVE COMMITTEE MEETING.

December 27, 1907.

Committee met with all members present. The object of the meeting was to consider and look over revised plans for the Administration Building as per resolution of the Board. After giving careful consideration to the revised plan for said building the Secretary was instructed to have the architect proceed at once on the work of preparing complete plans and specifications as per sketch agreed upon. It was also agreed to invite bids on the various parts of the work as well as upon the building as a whole

Bond of the Secretary for Ten Thousand Dollars ($10,000.00) was approved. The committee looked after several details in regard to the grounds, after which a motion was made to adjourn.

EXECUTIVE COMMITTEE MEETING.

January 22, 1908.

Committee met with members Cameron and Simpson present

The speed program for the 1908 fair was considered and finally agreed upon as per published program in the Premium List.

January 23, 1908.

Members of the committee attended the joint meeting at Chicago on the 23d, composed of the Officers and amusement committees of the Minnesota, Wisconsin, and Indiana State Fairs. The purpose of this meeting was to discuss the amusements for the various State Fairs.

January 24, 1908.

Committee attended a meeting at Columbus, Ohio, composed of all the State Fairs of the central west. The purpose of the meeting was to consider a uniform classification of rules and premiums at the various State Fairs.

EXECUTIVE COMMITTEE MEETING.

February 18, 1908.

Committee met with all members present. This being the date set for receiving bids for the construction of the Administration Building; the hour having arrived the committee proceeded to open and list all bids filed for all classes of work. After opening the bids it was agreed to call the meeting of the Board on Friday, February 21st, and submit to them a full list of all bids received. A list of the bids will be found in the minutes of the Board. The committee considered some slight revision of the premium list with reference to the Horticultural and Horse Departments and approved the recommendations submitted by the superintendents of the above departments. It was decided to hold a meeting of the committee on the 10th of March for the purpose of receiving proposals for attractions and amusements for the 1908 fair. On motion the committee adjourned.

MEETING OF THE BOARD OF MANAGERS FOR THE IOWA STATE FAIR AND EXPOSITION.

February 21, 1908.

Board met as per call of the President at 9 o'clock A. M. with all members present. The President stated that the purpose of the meeting was to consider bids received which had been received by the Executive Committee for the erection of the Administration Building at the State Fair and Exposition Grounds. He further stated that in compliance with the resolution of the Board at their December meeting the Executive Committee had instructed the architects to revise their former plans and specifications and ask for bids. The bids were received at the meeting of the Executive Committee on the 18th of the present month and were respectfully referred to the meeting of the full Board.

The bids for the Administration Building received and opened on Tuesday, February 18th, by the committee were as follows:

FORM OF PROPOSAL.

All bids must be submitted in the following form:

Mr. J. C. Simpson,
Secretary State Board of Agriculture,
Des Moines, Iowa.

Dear Sir:—

The undersigned having carefully examined the drawings and read the specifications prepared by Smith, Wetherell & Gage, Architects, Des Moines, Iowa, for the Administration Building to be erected on the State Fair Grounds at Des Moines, Iowa, hereby propose:

1. To furnish all material and to execute all parts of the work therein shown and described, complete for the sum of——————— (Design to be for exterior plastered).

W. J. Zitterell	$29,348.00
Martin Conroy Co	35,675.00
Chas. Weitz' Sons	27,725.00
Benson & Marxer	34,495.00
J. E. Lovejoy	31,175.00
Jas. Main & Sons Co	29,000.00
E. W. Nichols & Co	33,057.00
J. B. McGorrisk	28,020.00
J. E. Tusant	29,404.95
C. W. Ennis	31,718.80
J. B. Greeley & Son	28,666.00
Whitney-Bergdall	26,912.00

2. To furnish all material and labor and to execute all parts of the work therein shown and described, complete for the sum of: (Design to be brick for outside walls.)

W. J. Zitterell	$31,536.00
Martin Conroy Co	35,975.00
Chas. Weitz' Sons	30,588.52
Benson & Marxer	37,161.00
J. E. Lovejoy	34,000.00
Jas. Main & Sons Co	31,500.00
E. W. Nichols & Co	35,200.00

J. B. McGorrisk	29,552.00
J. E. Tusant	30,343.75
C. W. Ennis	33,300.00
J. B. Greeley & Son	32,718.00
Whitney-Bergdall	29,578.00

3. Building complete with plaster exterior desing omitting the plastering, finish, finished floors and second story interior; also wall studs of this story for interior partitions and ceiling joist except those necessary for bearings to support roof work, for the sum of:

W. J. Zitterell	$25,900.00
Martin Conroy Co	31,250.00
Chas. Weitz' Sons	24,716.83
Benson & Marxer	30,939.00
J. E. Lovejoy	28,700.00
Jas. Main & Sons Co	24,900.00
E. W. Nichols & Co	31,000.00
J. B. McGorrisk	24,921.00
J. E. Tusant	27,110.40
C. W. Ennis	29,218.00
J. B. Greeley & Son	26,206.00
Whitney-Bergdall	24,598.00

4. Building complete with brick design, omitting the plastering, finish, finishing floors of second story interior; also wall studs of this story for interior partitions and ceiling joist except those necessary for bearings to support roof work, for the sum of:

W. J. Zitterell	$28,600.00
Martin Conroy Co	31,219.00
Chas. Weitz' Sons	27,572.35
Benson & Marxer	33,895.00
J. E. Lovejoy	31,525.00
Jas. Main & Sons Co	28,575.00
E. W. Nichols & Co	33,200.00
J. B. McGorrisk	26,453.00
J. E. Tusant	28,048.00
C. W. Ennis	30,718.00
J. B. Greeley & Son	30,252.00
Whitney-Bergdall	27,264.00

5. Building complete with plaster exterior design, omitting the plastering, finish, finished floors of second story interior; also all studs of this story for interior partitions and ceiling joist except those necessary for bearings to support roof work, and all porch work above the porch floor. The central features of porches, front and rear, to be finished as shown, for sum of:

W. J. Zitterell	$23,400.00
Martin Conroy Co	30,449.00
Chas. Weitz' Sons	22,795.96
Benson & Marxer	28,165.00
J. E. Lovejoy	27,300.00
Jas. Main & Sons Co	23,717.00

E. W. Nichols & Co	27,500.00
J. B. McGorrisk	23,184.00
J. E. Tusant	24,247.95
C. W. Ennis	28,118.00
J. B. Greeley & Son	25,896.00
Whitney-Bergdall	23,304.00

6. Building complete with brick exterior design, omitting the plastering, finish, finished floors of second story interior; also all wall studs of this story for interior partitions and ceiling joist except those necessary for bearings to support roof work, and all porch work above the porch floor, for the sum of:

W. J. Zitterell	$26,945.00
Martin Conroy Co	32,338.00
Chas. Weitz' Sons	24,125.07
Benson & Marxer	30,405.00
J. E. Lovejoy	29,825.00
Jas. Main & Sons Co	24,870.00
E. W. Nichols & Co	31,300.00
J. B. McGorrisk	23,585.00
J. E. Tusant	25,186.75
C. W. Ennis	29,618.00
J. B. Greeley & Son	29,450.00
Whitney-Bergdall	25,968.00

7. If Y. P. floors are put in where cement floors are called for on plan, deduct:

W. J. Zttierell	$ 188.00
Martin Conroy Co	150.00
Chas. Weitz' Sons	256.70
Benson & Marxer	402.00
J. E. Lovejoy	90.00
Jas. Main & Sons Co	300.00
E. W. Nichols & Co	125.00
J. B. McGorrisk	276.00
J. E. Tusant	166.60
C. W. Ennis	250.00
J. B. Greeley & Son	500.00
Whitney-Bergdall	150.00

8. If cement floors in basement are omitted, deduct:

W. J. Zitterell	$ 633.00
Martin Conroy Co	850.00
Chas. Weitz' Sons	700.00
Benson & Marxer	796.00
J. E. Lovejoy	550.00
Jas. Mains & Sons Co	650.00
E. W. Nichols & Co	250.00
J. B. McGorrisk	535.00
J. E. Tusant	750.00
C. W. Ennis	640.00
J. B. Greeley & Son	675.00
Whitney-Bergdall	1,100.00

9. If cupboards, shelving, interior doors and frames of basement, stairs from first story to basement are omitted, deduct:

W. J. Zitterel	$ 771.00
Martin Conroy Co	750.00
Chas. Weitz' Sons	350.00
Benson & Marxer	963.00
J. E. Lovejoy	350.00
Jas. Main & Sons Co	400.00
E. W. Nichols & Co	500.00
J. B. McGorrisk	600.00
J. E. Tusant	795.00
C. W. Ennis	500.00
J. B. Greeley & Son	1,100.00
Whitney-Bergdall	525.00

....................................hereby agree that if................ proposal is accepted to enter into contract and furnish itemized schedule and bond as required within ten days after notification of such acceptance, and as a guarantee thereof, herewith submit certified check on bank of ....for $.................., being 3% of the above bid, subject to the conditions set forth in the general conditions forming a part of the specifications.

Respectfully submitted,

....

Contractor.

FORM OF PROPOSAL.

All bids must be submitted on the following form:

MR. J. C. SIMPSON,
Secretary State Board of Agriculture,
Des Moines, Iowa.

DEAR SIR:—

The undersigned having carefully examined the drawings and read the specifications prepared by Smith, Wetherell & Gage, Architects, Des Moines, Iowa, for the Plumbing of the Administration Building, to be erected on the State Fair Grounds at Des Moines, Iowa, hereby propose:

1. To furnish all material and labor and to execute all parts of of the work therein shown and described complete, except the sewer pipe between building and cess pool, for the sum of:

Wallace & Linnane	$2,655.00
Globe Plumbing & Heating Co	3,150.00
Des Moines Plumbing and Heating Co	2,750.00
A. W. Walker & Co	2,600.00

2. Will put sewer pipe in between cess pool and building, for per lineal foot:

Wallace & Linnane	$ .75
Globe Plumbing & Heating Co	.50
Des Moines Plumbing & Heating Co	.45
A. H. Walker & Co	.75

3. If steam cookers are omitted, deduct:

Wallace & Linnane	$ 200.00
Globe Plumbing & Heating Co	163.00
Des Moines Plumbing & Heating Co	300.00
A. H. Walker & Co	160.00

4. If ranges are omitted, deduct:

Wallace & Linnane	$ 200.00
Globe Plumbing & Heating Co	200.00
Des Moines Plumbing & Heating Co	135.00
A. H. Walker & Co	170.00

5. If boiler supplying steam to steam cookers is omitted, deduct:

Wallace & Linnane	$ 225.00
Globe Plumbing & Heating Co	143.00
Des Moines Plumbing & Heating Co	200.00
A. H. Walker & Co	185.00

....hereby agree if .... proposal is accepted to enter into contract and furnish itemized proposal and bond as required within ten days after notification of such acceptance, and as a guarantee thereof, herewith submit certified check on bank of ....for $............, being 3% of the above bid, subject to the conditions set forth in the general conditions forming a part of the specifications.

Respectfully submitted,

....

Contractor.

After examining the bids, it was decided that if a building was to be erected it should be of brick.

The following resolution was offered, and upon roll call unanimously adopted:

"*Resolved*, That contracts for the Administration Building be awarded to the lowest responsible bidder under proposition No. 4 of the form of proposal, viz: general contract to J. B. McGorrisk at $26,453.00, with an option until October 1st on his bid of $29,552.00 under proposition No. 2 of the form of proposal; plumbing contract to A. H. Walker & Co. at $1,545.00, with an option until October 1st for finishing as per proposal No. 1 at $2,600.00.

Be it Further Resolved, That the Executive Committee be and are hereby authorized to execute said contracts and such other expenditures for improvements at the Iowa State Fair and Exposition Grounds as in their judgment are needed or necessary.

Be It Further Resolved, That the Executive Committee are hereby authorized and empowered to make such minor modifications in the plan of the Administration Building as may seem to them advisable."

The following resolution with reference to the management of the Iowa State Fair and Exposition was reported by the special comimtte and upon roll coll adopted by a unanimous vote:

"*Resolved*, That the general management of the Iowa State Fair and Exposition be delegated to the Executive Committee as provided in Section 1657-i, Chapter 3, of the Supplement to the Code of Iowa, and that said Executive Committee be and is hereby authorized to employ a secretary or clerk at a salary of not to exceed twelve hundred dollars ($1200.) per year, said salary to be paid from the receipts of the Iowa State Fair and Exposition."

"*Resolved*, That the Board of Directors of the Iowa Department of Agriculture hereby extend a cordial invitation to the American Breeders' Association to hold its next annual meeting in Des Moines in January, 1909, or at such time as may suit the convenience of that Association."

"*Resolved*, That the Board of Directors of the Iowa Department of Agriculture hereby extend a cordial invitation to the American Berkshire Congress to hold its next annual meeting in Des Moines, January, 1909, or as such time as may suit the convenience of the Congress."

The Committee on Per Diem and Mileage appointed by the President submitted the following report and on motion same was adopted and the Secretary instructed to issue warrants in payment of same:

Mr. President: Your Committee on Per Diem and Mileage beg leave to report as follows:

Name	Days	Rate	Amt.	Miles	Amt.	Total
C. E. Cameron	6	$4.00	$24.00	140	$14.00	$38.00
W. C. Brown	3	4.00	12.00	102	10.20	22.20
R. S. Johnston	3	4.00	12.00	158	15.80	27.80
C. W. Phillips	3	4.00	12.00			12.00
E. M. Reeves	3	4.00	12.00	123	12.30	24.30
R. T. St. John	3	4.00	12.00	195	19.50	31.50
S. B. Packard	3	4.00	12.00	58	5.80	17.80
T. C. Legoe	3	4.00	12.00	100	10.00	22.00
C. F. Curtiss	3	4.00	12.00	37	3.70	15.70
John Ledgerwood	3	4.00	12.00	64	6.40	18.40
M. McDonald	3	4.00	12.00	65	6.50	18.50
O. A. Olson	3	4.00	12.00	155	15.50	27.50
H. L. Pike	3	4.00	12.00	200	20.00	32.00

JOHN LEDGERWOOD,
H. L. PIKE,
R. S. JOHNSTON,
Committee.

It was moved and carried that all unfinished business be delegated to the Executive Committee with full authority and power to act.

Resolution was adopted authorizing the payment to Smith, Wetherell & Gage, architects, 3 per cent for plans and specifications and 1 per cent for supervision in the construction of the Administration Building.

On motion the Board adjourned.

AUDITING COMMITTEE MEETING.

Friday, February 21, 1908.

Auditing Committee met and approved the following bills for which warrants had been issued:

6217	Am. Ass'n of Fairs and Expositions, dues	$ 35.00
6218	Mrs. F. H. Schoenhut, services revising 1907 prem. list	10.00
6219	C. G. Morrison, corn	32.75
6220	Henry Deets, painting	10.00
6221	Bertha Herr, exp. Pure Food Com	1.00
6222	John Hethershaw, services at corn show	7.00
6223	Fred Hethershaw, services as supt. corn show	10.00
6224	Mrs. C. N. Smith, 1907 premiums	5.00
6225	H. C. Wallace, expense of speakers at S. F. Institute	24.65
6226	G. C. Fuller, December salary	100.00
6227	C. E. Cameron, Ex. Com. meeting	22.00
6228	W. C. Brown, Ex. Com. meeting	18.20
6229	W. A. McKarrow, services and expenses, S. F. Institute	31.22
6230	D. M. Water Works Co., water	7.38
6231	Jas. H. Deemer, December salary	83.33
6232	Jas. H. Deemer, Supt. pay roll	106.00
6233	M. R. Mason & Son, insurance	35.00
6234	Blaise & Blaise, rept. annual meeting, S. F. Institute	55.10
6235	Blaise & Blaise, rept. annual meeting, S. F. Institute	8.20
6236	W. C. Brown, special com. work. Privilege Dept	22.20
6237	J. I. Myerly, P. M., stamps	40.00
6238	G. C. Fuller, January salary	100.00
6239	J. C. Simpson, exp. trip to Chicago and Columbus, Ohio	48.50
6240	Jas. H. Deemer, Supt. pay roll	221.30
6241	C. G. Morrison, straw	273.37
6242	Jas. H. Deemer, January salary	83.33
6243	Baker-Trisler Co., office supplies	6.57
6244	W. U. Telegraph Co., telegrams	2.54
6245	Iowa Telephone Co., toll charges	11.50
6246	Mutual Telephone Co., toll charges and rental	18.50
6247	Ferguson Printing Co., printing	76.40
6248	N. W. Ayer & Son, newspaper directory	5.00
6249	Iowa Drug Co., itemized bill, Dairy Dept., Fair, 1907	.50
6250	T. F. Shannon, views at fair grounds	31.70
6251	Ben Wolgar, shoeing bill	39.25
6252	O'Dea Hardware Co., glass, etc	5.22
6253	Purcell Printing Co., printing premium warrants	15.00
6254	John Sundberg, judging winter corn show	21.90
6255	Sanders Pub. Co., photographs of fair grounds and horse book	29.50
6256	Geo. M. King, sewer pipe	3.00
6257	Iowa Pipe & Tile Co., pipe and tile	10.75
6258	C. E. Cameron, exp. trip to Chicago and Columbus, Ohio	49.15
6259	W. C. Brown, exp. trip to Chicago and Detroit	42.20

The following bills and claims were approved and Secretary instructed to issue warrants in payment of same:

6273	W. C. Brown, Ex. Com. work	$ 22.20
6274	Jas. H. Deemer, Supt. pay roll	153.80
6275	C. G. Morrison, corn	18.57
6276	A. R. Corey, February salary	90.00
6277	J. C. Simpson, clerk to Ex. Com	100.00
6278	Jas. H. Deemer, February salary	83.33
6279	Chas. Koenigsberger, supplies	3.25
6280	J. A. Backman, supplies	11.50
6281	Daily Capital, subscription to Feb. 1, 1908	2.50
6282	Daily News, subscription to Jan. 1, 1908	6.00
6283	Geo. A. Miller Ptg. Co., supplies	11.90
6284	Chas. A. Laurence, subscription Railway Guide	2.00
6285	Improvement Bulletin, advertising	8.00
6286	D. M. Rubber Stamp Works, stamps	2.80
6287	Merchants Transfer & Storage Co., drayage	.25
6288	Geo. Ferguson, 500 2c stamps	10.00
6289	R. L. Polk & Co., city directory	6.00
6290	Koch Bros. Ptg. Co., warrant and claim registers	29.75
6291	Armstrong Press, printing envelopes	20.40
6292	Iowa Lithographing Co., printing stationery and warrants	61.85
6293	Bert Perkins, wiring R. I. Plow Co. exhibit, fair 1907	5.13
6294	Wm. R. Jenkins, book, "Clean Milk"	2.50
6295	Mutual Telephone Co., toll charges	.65
6296	Wilcox, Howell & Hopkins, insurance	52.50
6297	E. D. Chassell, binding award books	2.00
6298	Star Engraving Co., engraving	3.50
6299	Billboard Pub. Co., subscription	4.00
6300	D. M. Water Co., rental Jan. and Feb., fair grounds	20.30
6301	Globe Mchy. & Supply Co., supplies	4.05

EXECUTIVE COMMITTEE MEETING.

February 22, 1908.

Committee met as per previous arrangement, with all members present.

Contract was signed with J. B. McGorrisk for the building of the Administration Building as per his Number 4 bid, viz.: $26,453.00. The plumbing contract was awarded to A. H. Walker Company, the total amount of his bid accepted being $1,545.00.

The Secretary was instructed to issue warrants in payment of estimates on said contracts from time to time, as per contract.

It was agreed to use the present Secretary's office building at the Fair Grounds for an exhibit from the various departments of the Iowa State College of Agriculture and Mechanic Arts.

J. C. Simpson was selected as clerk to the Executive Committee and for extra services in connection with the work of said committee he was to receive twelve hundred dollars per annum, payable monthly, by warrant drawn upon the Treasurer, and said compensation for extra services to date from February 1, 1908

Warrant was issued to W. C. Brown for per diem and mileage for Executive Committee meeting.

On motion the committee adjourned.

EXECUTIVE COMMITTEE MEETING.

March 10-18, 1908.

Committee met with all members present. The purpose of the meeting as stated by the President was to discuss and outline as nearly as possible at this time the amusement program for the Iowa State Fair and Exposition of 1908, the policy and best method of advertising, a permanent plat or arrangement of the State Fair Grounds with special reference to the location of the new administration building, improvements and repair work needed to put the buildings and grounds in shape for the fair, and any other business which might come before them.

The Secretary presented the matter of the possibility of holding the National Dairy Show at the State Fair and Exposition Grounds in October and November of the present year, stating that Gov. A. B. Cummins had expressed a wish that the State Board of Agriculture give their consent to use the grounds for this purpose, it being a national show in character and the state would be highly honored and benefited by having it held within its borders.

The following resolution was offered and unanimously adopted by the committee:

WHEREAS, The attention of the Executive Committee has been called to the possibility of bringing the next meeting of the National Dairy Show to Iowa; and

WHEREAS, The Executive Committee believes it would be not only a great honor but a material benefit to the dairy interest of our state to have this show held within its borders; and

WHEREAS, The most suitable place for the holding of said show is at the State Fair grounds, therefore, be it

Resolved, That the free use of the Iowa State Fair and Exposition grounds and such buildings as are necessary and may be agreed upon by the secretary of the State Board of Agriculture, be tendered to the officers and managers of the National Dairy Show or the local committee having the arrangements in charge, provided, that any and all expenses incidental to or in preparing the grounds and buildings, water rental, maintenance of electric light plant, closets, providing proper fire protection, etc., during the time of the show, the cleaning up and putting the grounds and buildings in as good condition as they were before said show was held, is paid by the management of said National Dairy Show or local committee in charge.

The Secretary was instructed to send the following telegram to the National Creamery and Buttermakers Association:

To the National Creamery & Buttermakers' Association Convention, St. Paul, Minn.

The Iowa State Board of Agriculture send you greetings and extend to you a most cordial and hearty invitation to select Des Moines as the place of holding your next annual convention.

(Signed) J. C. SIMPSON,
Secretary.

Dated March 11, 1908.

Secretary informed the committee of the time and place for the holding of the next National Corn Exposition; the place being Omaha and the time the second and third weeks in December. The following resolution was unanimously adopted by the committee:

WHEREAS, The managers of the National Corn Show and Exposition have selected Omaha, Neb., as the place for holding their second annual corn show; and

WHEREAS, The Executive Committee of the Iowa State Board of Agriculture believe this show will promote and educate the corn growers in the great corn belt of America; and

WHEREAS, Iowa being the leading corn growing state, being alive at all times to any movement which will benefit her farmers in educating them along the lines of improvement in their work, therefore be it

Resolved, That the Executive Committee pledge themselves and the Iowa State Board of Agriculture to lend every possible assistance to see that Iowa is creditably represented by a good exhibit.

The committee spent considerable time at the Fair Grounds inspecting the necessary improvements and repairs to be made prior to the 1909 Fair. Representatives of the various amusement and attraction agencies appeared and personally submitted a list of attractions to the committee. Committee also received propositions from various bands, all of which were placed on file to be taken up by the committee later in the week.

The Secretary was instructed to employ such additional clerical assistance from time to time as needed, and to issue warrants in payment for such services at the end of each month.

After considering the various propositions offered for music and other amusements for the State Fair the following contracts were let:

Pain Pyrotechnic Co., the spectacle "Sheridan's Ride," four nights	$4,000.00
C. P. Graham's orchestra	207.00
G. W. Tremain, Mgr., 56th Regiment Band	825.00
F. M. Barnes, representing the Barnes Western Theatrical Exchange, for five vaudeville acts	2,300.00
B. E. Gregory, one vaudeville act	125.00
Prof. L. F. Sunline, one act	250.00
Park Booking Circuit, two acts	650.00
A. Liberati, for his military band and Grand Opera Co., sixty people	3,600.00
Western Vaudeville Association, one act	1,000.00

Warrants for per diem and mileage were issued as follows:

6304	C. E. Cameron	$50.00
6303	W. C. Brown	43.00

On motion the committee adjourned.

EXECUTIVE COMMITTEE MEETING.

April 16-18, 1908.

Committee met with all members present.

The committee spent most of the time at the Fair Grounds in consultation in regard to the various works in progress and instructions were given to the Superintendent as to how to proceed in the future. The Secretary presented an estimate for the advertising budget for 1908. Budget was considered by the committee and it was agreed to carry paid advertisements with the county newspapers, not to exceed six hundred in number. The balance of the budget as presented by the Secretary was approved. His estimate amounting in the agregate to approximately seventy-five hundred dollars (7,500). After considering the details with reference to the coming State Fair the committee adjourned on motion.

Warrants were issued for per diem and mileage as follows:

6311	C. E. Cameron	$30.00
6312	W. C. Brown	38.20

EXECUTIVE COMMITTEE MEETING.

May 21, 22, 23, 1908.

Committee met with all members present.

A statement of the insurance carried on the buildings on the Iowa State Fair and Exposition Grounds was presented, showing the total insurance in force, amount of premium, with date of expiration:

Building Insured	Amount Fire Ins.	Premium Fire Policies	Amount Tornada Ins.	Premium Tornado Policies	Total Comb. Premi'm	Date of Expiration
†Stock pavilion....	$ 20,000	$ 600.00	$ 20,000	$100.00	$ 700.00	8-1 -1908
†Agr'l. Bldg.	15,000	375.00	15,000	75.00	450.00	5-13-1908
General Form	37,500	1,125.00	37,500	234.52	1,359.52	9-26-1910
Iowa Producers Bldg	1,500	45.00	1,500	7.50	52.50	1-24-1911
Brick dining halls.	4,000	100.00			100.00	8-14-1909
Closet at south gate	3,000	112.50	3,000	18.75	131.25	8- 1-1908
Cattle barn No. 12..	2,500	75.00	2,500	12.50	87.50	8-1- 1908
*Street car depot...	1,500	56.25	1,500	9.38	65.63	8-5- 1909
Swine barn and show pavilion			15,000	75.00	75.00	9-26-1910
Old Sec'y. and Treas. office	1,000	30.00	1,000	5.00	35.00	12-28-1910
Cattle barn No. 14..	3,000	75.00	3,000	15.00	90.00	7- 7-1909
Brick horse barn....	5,000	125.00	5,000	25.00	150.00	9-26-1910
House and barn....	2,000	26.00	2,000		26.00	9-26-1910
Old swine pavilion & cattle barn No. 13	1,500	56.25	1,500	9.38	65.63	7-1- 1909
Power house and machinery	3,000	75.00	3,000	15.00	90.00	9-26-1910
	$100,500	$2,876.00	$111,500	$602.03	$3,478.03	

*This is only half of the insurance on this building; the Street Car Company carries the balance.

†Insurance expires in 1908.

Mr. Simpson was instructed to have the insurance renewed on the Agricultural Building for three years, same having expired on May 13, 1908; $15,000 fire and $15,000 tornado.

The following claims were approved and warrants ordered drawn in payment of same:

Claim No.		
6029	Savery Hotel, meals during board meeting................	$ 18.65
6021	The American Contractor, adv. for bids......................	10.80
6053	Miller Printing Co., printing entry book......................	13.75
6009	Ross & Ross, itemized bill...	6.50
6054	Iowa Seed Co., plants for fair grounds.....................	54.83

Claim No.		
6013	American Hackney Horse Society, Vol. 1 and 2, stud books..	5.00
6032	Baker-Trisler Co., picture frame	3.50
6022	Langan Bros. Co., blank book	.65
6072	Sherwin-Williams Co., supplies	30.00
6037	Armstrong Press, printing	16.50
6065	Jas. H. Deemer, freight bills	2.80
6070	Green Foundry & Furnace Works, supplies	11.50
6077	Spirit of the West, adv. speed program	62.50
6023	Hawkeye Press Clipping Bureau, clippings	24.00
6004	Billboard Pub. Co., advertising	10.00
6034	D. M. Rubber Stamp Works, stamp	.70
6061	N. B. Bishop, adv. in U. C. T. program	10.00
6062	Buck Bros. Co., glass	1.75
6014	Ferguson Ptg. Co., printing	3.50
6039	Western Union Tel. Co., telegrams	6.41
6011	Western Union Tel. Co., telegrams	2.40
6056	Western Union Tel. Co., telegrams	1.15
6017	Mutual Telephone Co., rentals	16.50
6064	Mutual Telephone Co., toll charges	1.50
6005	Iowa Telephone Co., toll charges	2.15
6019	Iowa Telephone Co., toll charges	2.45
6043	Iowa Telephone Co., toll charges	2.75
6068	Iowa Telephone Co., toll charges	1.10
6010	Des Moines Water Co., Feb. water bill for fair grounds	12.17
6028	Des Moines Water Co., March water bill for fair grounds	13.54
6079	Des Moines Water Co., April water bill for fair grounds	6.15
6023	Am. Trotting Ass'n., list of names	10.00
6018	Am. Trotting Register Ass'n., 1907 Year Book	4.00
6038	Geis Botsford, Sec'y Commercial Club, dues	15.00
6058	J. C. Simpson, expenses trip to Chicago	24.85

The necessity of securing the services of another band for the State Fair and Exposition was discussed. Mr. Simpson was instructed to make a proposition to Mr. Reed, manager of Reed's Band at Sioux City, Iowa, of $816.00 for twenty-four men, services to begin at nine o'clock A. M., Monday, August 24th, and closing after the evening show in the stock pavilion on Friday, the 28th.

The Secretary was instructed to purchase from the E. T. Burrows Co., screens and doors for the basement and first floor of the Administration Building, as per their proposition for $230.45. He was further instructed to order two ranges, two steam cookers, two refrigerators and two coffee urns to be installed in the kitchens in the basement of the Administration Building.

The program for the night entertainment in the Stock Pavilion was presented by Mr. Simpson and discussed by the committee.

Warrants were issued for per diem and mileage as follows:

6081	C. E. Cameron	$30.00
6082	W. C. Brown	26.20

On motion the committee adjourned.

EXECUTIVE COMMITTEE MEETING.

June 7-8, 1908.

Committee met with all members present. The matter of furniture for the new Administration Building was taken up by the committee and considered at length. A list had previously been prepared by the Secretary and prices received upon it from the various furniture dealers in this city. After going over the catalogs and prices submitted by the various firms it was the judgment of the committee that the prices were all too high, the committee agreeing that more suitable prices could be secured if they would go direct to the factories and jobbing houses in Chicago. Therefore, Mr. Cameron and Mr. Simpson were appointed a special committee to go to Chicago and call upon the various dealers and manufacturers and make such purchases as were suited for the building. Immediately following the adjournment of the committee Mr. Camoron and Mr. Simpson made the trip to Chicago and orders were placed with the Olson and Derby Desk Companies for desks, and with the Derby Desk Company and the Crocker Chair Company for chairs. Tables, settees, and other miscellaneous furniture was purchased from Davidson & Sons, furniture dealers in Des Moines. The orders and bills for all furniture purchased are on file in this office, showing an itemized statement as to prices paid for the various pieces.

Warrants were issued for per diem and mileage as follows:

C. E. Cameron	$26.00
W. C. Brown	30.20

EXECUTIVE COMMITTEE MEETING.

June 25, 26, 27, 1908.

Committee met with all members present, as were also members of the Board, Curtiss and Olson.

A visit to the grounds was made for the purpose of considering the best arrangement for seating the stock pavilion for the evening show. After careful inspection of the building the plan for the seating was agreed upon. The following prices were also agreed to for the evening entertainment: All seats on the west side fifty cents and on the east side thirty-five cents. The committee authorized Mr. Curtiss to secure the services of a ring master for the evening show in the Stock Pavillion.

Consideration was given to the various entries and exits at the grounds and at the request of the Superintendent of Admissions, Olson, several minor changes were ordered.

Warrants were issued for per diem and mileage as follows:

C. E. Cameron	$30.00
W. C. Brown	26.20
O. A. Olson	27.50

EXECUTIVE COMMITTEE MEETING.

Monday, August 5, 1908.

Committee met with all members present as was also members of the Board, Curtiss, Johnston and Phillips.

Committee met at the request of the Secretary to discuss the ways and means of providing additional stable room for horses entered in the show ring. The statement of the number of the horses entered and the stalls required was made by Secretary Simpson, showing that from 150 to 170 additional stalls would be required to provide stable room for all the horses entered. It was shown that it would cost from $2,500.00 to $3,000.00 to provide temporary stalls for this number. It had been suggested that a duplicate of the brick horse barn built in 1907 be put up, provided same could be constructed in fifteen days; by so doing the saving of from $2,500.00 to $3,000.00 on the cost of the building could be made, as the money which otherwise would have been expended in providing temporary stalls could be used in part payment in the cost of this building. After discussing the matter at length, we, the committee and members of the Board: Phillips, Johnston and Curtiss called in J. B. McGorrisk, contractor, and asked at what price and in what time he could construct a barn a duplicate of the one built in 1907. The matter was carefully considered by Mr. McGorrisk who notified the committee later that he would agree to build the barn in fifteen days for $9,600.50, this being the amount of the contract for the barn built by Mr. Weitz. It was decided to immediately go ahead with the construction of the barn, and the contract was made with

Mr. J. B. McGorrisk at the above named figure. The committee further decided that forty additional stalls were necessary to take care of the speed horses entered in the racing, and it was decided to build comfortable barns on the north side for this purpose. It was also decided to construct a temporary barn containing seventy single stalls, more or less, west of the brick horse barn.

The Secretary was instructed to write Superintendent Packard to ascertain from him if it would be possible to use the dairy barn for horses this year.

Warrants for per diem and mileage were issued as follows:

R. S. Johnston	$23.80
C. E. Cameron	30.00

MEETING OF THE STATE BOARD OF AGRICULTURE.

Board Room, Administration Building,
Iowa State Fair and Exposition Grounds,
Thursday, August 20, 1908.

Board met as per call of President with all members present except Brown, Phillips, Curtiss and Gilbertson.

Secretary asked for instructions with regard to the Forage Department furnishing feed for the marshals and the mounted guards. After the question had been duly discussed by the Board it was deemed advisable to increase the marshal's allowance to $45.00 and that of the guards to $3.50 per day; they to pay for whatever feed was ordered from the department.

The Secretary made a statement on behalf of the Executive Committee to the Board informing them of the action of said committee in contracting with Mr. J. B. McGorrisk for the building of the second section of the horse barn; the amount of contract being $9,651.00. This action on the part of the committee was considered imperative in order to provide proper accommodations for the large number of horses entered in the Horse Department, for which no stalls were available. The Secretary also made a statement of the necessity of building two temporary barns for show horses and two additional barns for speed horses.

On motion of Mr. Reeves the action of the Executive Committee in contracting for the erection of the brick horse barn and other temporary barns was approved by the Board.

Further discussion was had regarding minor details of the fair, among which was the resolution passed requiring all persons who do not desire to remain during the day to leave the grounds before the beginning of the roundup at 6:30 o'clock A. M.

On motion the board adjourned.

Friday, August 21, 1908.

Board met with all members present.

The President stated that the purpose of the meeting was to give a hearing to various representatives of publications, who desired to present to the Board the question of permitting the solicitors of the various papers to work promiscuously over the grounds taking subscriptions and giving away premiums. The Board listened to the arguments of the various gentlemen present, after which they went into executive session.

The following resolution was made and adopted with but one dissenting vote:

Resolved, That it is the belief of this board that it would not be for the best interests of the fair, and would be annoying to the patrons thereof, to permit the subscription solitictors of the various papers to work promiscuously over the grounds in taking subscriptions for their various papers; also that the use of premiums in connection with the taking of subscriptions should be prohibited except as may be handled at the permanent headquarters of such papers.

On motion the board adojurned.

Friday, August 28, 1908.

Board met at four o'clock P. M. at the Board room in the Administration Building, at the call of the President. The following members were present: Cameron, Brown, Simpson, Johnson, Prillips, Reeves, St. John, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Olson and Pike.

The President stated that the object of the meeting was to pass upon the payrolls of the various departments and the following pay rolls were presented and approved by the Board:

T. C. Legoe, Supt. Department M	$496.20
W. C. Brown, Supt. Concessions	545.00
R. T. St. John, Supt. Agricultural, pantry and kitchen Department.	511.25
S. B. Packard, Supt. Cattle Department	189.10

The Secretary was authorized to issue warrants in payment of the above pay rolls.

The President appointed committee on per diem and mileage as follows: Messrs. Ledgerwood, Legoe and Reeves.

On motion the Board adjourned to 9 o'clock P. M.

Nine o'clock P. M.

Board met pursuant to adjournment with all members present.

The following additional payrolls were presented:

W. C. Brown, Supt. Concessions	$133.58
C. E. Cameron, President, bill for the drum corps	18.40
S. B. Pacakrd, Chairman Committee on noxious weeds, bill of Prof. L. H. Pammell	9.37
H. L. Pike, Supt. Sheep and Poultry Departments	291.75
R. S. Johnston, Supt. Swine Department	461.15
C. W. Phillips, Supt. Ticket Department	244.15
A. L. Denio, Supt. Speed Department	485.40
O. A. Olson, Supt. Admission Department	2,247.75
G. S. Gilbertson, Treasurer's Department	1,044.23
E. M. Reeves, Supt. Horticultural Department	45.85
H. R. Wright, Supt. Dairy Department	276.45
Jno. Ledgerwood, Supt. Machinery Department	283.20
M. McDonald, Supt. Police Department	1,670.50
S. B. Packard, Supt. Cattle Department (for judges)	516.96
C. F. Curtiss, Supt. Horse Department	717.65
Wesley Green, Supt. Floricultural Department	75.00
J. C. Simpson, pay roll for forage department	382.75
J. C. Simpson, Sec., clerical help	522.25
J. C. Simpson, Sec., Publicity Department	98.90

The Committee on Per Diem and Mileage filed the following report, which was adopted:

Name	Days	Rate	Amt.	Miles	Amt.	Total
C. E. Cameron	21	$4.00	$ 84.00	142	$14.20	$ 98.20
W. C. Brown	40	4.00	160.00	102	10.20	170.20
R. S. Johnston	18	4.00	72.00	158	15.80	87.80
C. W. Phillips	18	4.00	72.00			72.00
E. M. Reeves	19	4.00	76.00	125	12.50	88.50
R. T. St. John	20	4.00	80.00	195	19.50	99.50
S. B. Packard	18	4.00	72.00	58	5.80	77.80
C. F. Curtiss	18	4.00	72.00	37	3.70	75.70
T. C. Legoe	22	4.00	88.00	100	10.00	98.00
John Ledgerwood	25	4.00	100.00	65	6.50	106.50
M. McDonald	19	4.00	76.00	65	6.50	82.50
O. A. Olson	20	4.00	80.00	152	15.20	95.20
H. L. Pike	21	4.00	84.00	200	20.00	104.00

Signed: JOHN LEDGERWOOD,
T. C. LEGOE,
E. M. REEVES,
Committee on Per Diem and Mileage.

On motion the Executive Committee was empowered to audit and approve all bills presented for which payment should be made prior to the meeting of the Auditing Committee.

The Secretary read a statement of the receipts of the fair up to the persent time.

The following resolution was offered by Mr. Curtiss and adopted:

Resolved, That Alex Galbraith & Son of Janesville, Wisconsin, be fined one hundred dollars ($100.00) for failure to comply with the rule requiring that exhibition stock be on the grounds at nine o'clock Saturday morning, August 22d.

The motion was made and adopted that the Executive Committee be authorized to close the option which the Board had with contractor McGorrisk for the completion of the Administration Building and to settle with him in full on completion of the work; also to close the option with A. H. Walker & Co. for additional plumbing.

On motion the Executive Committee was intsructed to have plans and estimates made for the construction of a steel and concrete amphitheater and to have the same ready to present at the meeting the Board in December.

On motion the Executive Committee was authoried to have plans made for future permanent arrangement of grounds and buildings.

EXECUTIVE COMMITTEE MEETING.

Friday and Saturday, September 18-19, 1908.

Committee met with members Cameron and Simpson present.

The question of closing the option given by Contractor McGorrisk for the completion of the Administration Building as per plans and specifications, also the option of A. H. Walker & Co., for the completion of the plumbing, as authorized by the Board at a previous meeting, was taken up and the contractors notified to proceed with their work.

Plans for an amphitheater were discussed at length but further action was postponed. The committee desired to gather further information regarding the details in the construction of said stand.

On motion the committee adjourned.

Wednesday, Thursday and Friday, September 23-25, 1908.

Committee met with all members present.

Minor details in regard to closing accounts for the last fair and for further improvements at the grounds were discussed by the committee.

A resolution was adopted authorizing the payment of one per cent

(1%) of the contract price for the building of two sections of the Horse Barn to O. O. Smith, architect, for his services in superintending the construction of said building.

The Secretary outlined to the committee his plan for making the Educational Exhibit of Farm Crops at the next fair.

The Secretary was instructed to remodel the Poultry Building and to get plans and estimate on the cost for fitting up the building with the Empire cooping system.

On motion the committee adjourned.

MEETING OF THE AUDITING COMMITTEE.

Wednesday, Thursday and Friday, September 23-25, 1908.

Auditing Committee met with members Legoe, Johnston and Phillips present.

Committee examined and audited all bills on file to date and warrants were authorized to be issued in payment thereof.

All bills for which warrants had been issued previous to the meeting of the Auditing Committee were examined and approved.

Thursday, December 10, 1908.

Meeting was called to order at 10 o'clock A. M. with President Cameron in the chair. On roll call the following members were found to be present: Cameron, Brown, Simpson, Johnston, Reeves, Curtin, Packard, Curtiss, Ledgerwood, McDonald, Olson, Pike and Wright.

On motion the minutes of the previous meeting were approved.

The following newly elected members were sworn in by the Clerk of the Supreme Court: President, C. E. Cameron; Vice-President, W. C. Brown; E. J. Curtin as member from the Fourth District, John Ledgerwood as member from the Eighth District, and O. A. Olson as member from the Tenth District.

On motion of Mr. McDonald, Mr. J. C. Simpson was elected Secretary of the Iowa State Board of Agriculture for the ensuing year, at a salary of eighteen hundred dollars ($1,800.00 per annum.

On motion of Mr. Johnston, G. S. Gilbertson was elected Treasurer for the ensuing year, at a salary of one hundred dollars ($100.00) per annum.

On motion of Mr. Ledgerwood, J. H. Deemer was elected Superintendent of the State Fair and Exposition Grounds for the ensuing year at a salary of one thousand dollars ($1,000.00) per annum.

On motion of Mr. Packard, the Executive Committee was instructed to plan with the Superintendent of Grounds a proper organization for the work during the State Fair, to the end that the force may be allotted to the several departments in the way of carpenters, electricians, and carts or wagons to remove the excrement, and the cleaning of the grounds; and that the committee report to the meeting of the fair managing board to be held at the fair grounds in August.

Hon. W. B. Seeley and Hon. B. F. Felt appeared before the Board at this time in behalf of the State Association of Short Courses. They asked that the Board consider the question of establishing a model kitchen at the next State Fair, and if possible, the erection of a model farm house for a meeting place for those interested in short course work. It was suggested by members of the Board that this possibly could be arranged for at the building formerly occupied as the ladies' rest cottage and which was to be used the coming year as an exhibits and lecture building for the Iowa State College of Agriculture.

The following report was submitted by the Secretary:

SECRETARY'S REPORT TO THE BOARD.

To the State Board of Agriculture:

Gentlemen: Before taking up the new work for the year I desire to call your attention to certain suggestions and recommendations offered in our report and read before the Agricultural Convention of Wednesday. We believe the Board should take some action in this meeting asking for legislation authorizing the publication and distribution of such bulletins as would tend to promote agricultural production and agricultural education within our state. They should also seek to secure a change in the present law with reference to the collection of statistics on farm crops and live stock. These reports are now made biennially by the assessors to the secretary of state for publication in the official register. In our opinion this law should be changed requiring the statistics to be collected *annually* and returned to this office upon blanks sent out by the secretary, to be published in bulletin form first, and afterwards in the Year Book of Agriculture. If authority for the publication of bulletins is given, then the time for the publication of the Year Book should be changed to biennially. It would also be necessary to have a support fund for the employment of a bulletin editor, as the state fair fund should not be drawn upon to pay expenses incurred in work of this nature.

We would call your attention to our recommendation for a change in the law with reference to the filing of reports by the farmers' institutes. As the law now reads they are required to file the report of their expense account with the county auditor in order to secure the state aid. While it is true some of them now file reports in this office, it is not compulsory and many of them fail to file any reports whatever. If the securing of the state aid depended upon their filing their report in this office we would be able to make a much better report each year on the institute work.

There are minor changes in the law as to the powers and duties of the board with reference to the state fair which should be looked after. All of these matters should be discussed at this time by the board and placed in the hands of a committe to draft bills to be presented to the legislature for such changes as deemed advisable.

I further believe that with the assistance of the commercial bodies of Iowa that a fund could be secured for the establishment of a department of publicity and advertising. Its special line of work would be to gather, compile, disseminate facts and statistics upon the great possibilities we have to offer the homeseeker. There is quite a tendency among our own people to advise the young man to go to some newer country. I believe that literature should be placed before him showing the opportunities by following a system of more intensive farming. He gets such literature from the south telling him how he can make five hundred dollars per acre raising Bermuda onions; from the west telling him about making from one to two hundred dollars per acre raising potatoes; from Michigan telling him of the great fortune awaiting those who engage in the growing of celery, and so on. This is the kind of literature which attracts. I have here a little item which I clipped from the paper a few days ago telling of a crop of onions raised by a gentleman in Chickasaw county, from which he received returns of more than five hundred dollars per acre. A short time ago, while Secretary of Agriculture Hon. James Wilson was in the city, a gentleman from the northern part of the state came all the way to Des Moines to tell him of his great success in raising tobacco. Another newspaper item tells us of a net return of two hundred dollars per acre upon pop corn. When these things occur in other states the state department, the real estate dealers, or someone else spreads it broadcast. The lack of proper publicity of what can be done right here in Iowa is responsible for so many of our pople leaving or that imigrants do not come. It depends entirely upon what one expects to do with his land whether the price he has to pay is too high. At the state meeting of the Commercial Clubs being held today in the rooms of the Des Moines Commercial Club this very question of publicity is being discussed.

In our financial report made to the convention yesterday we set out an itemized statement of the receipts and disbursements for the year. You will notice that the item for improvements and repairs in the statement is given at $53,663.69. To this must be added the amount still due upon contracts for the completion of the Administration Building of $4,715.36. This brings the total amount of improvements for the past season up to $58,379.05, exceeding by $23,000.00 the amount in the treasury at the beginning of the year. In voting to build the Administration Building last spring we anticipated about $8,000.00 of the receipts of this year's fair; the additional $15,000.00 was used in the building of the second section of the proposed horse barn and for the completion of the Administration Building. The expenses for the past year, other than for the fair, were about $700.00 greater than the receipts for the same sourse. This added to the $23,000.00 expended for improvements in excess of funds available at the beginning of the year has necessarily to be paid out of the profits of this year's fair. The profits as shown were a trifle over $44,000.00, which will leave us with a net balance, after all outstanding warrants and bills are paid, of $20,000.00 with which to begin the new year. While this is less than we have had for a few years past, you must not forget that the board has expended about $100,000.00 in the past two years for improvements out of the fair fund. Some little work has been done since the fair, such as grading on the sidehill where vice-president's office was formerly located, the old secretary's office moved to this new location to be fitted up for a "Rest Cottage" for the women; the idea being to use the building on the hill for the exhibit from the Agricultural College. Contracts have been let for the moving of horse barns Nos. 6, 7, 8 and 9. This will make available valuable ground south of the street car loop. The interior of the poultry building was painted white and a new roof put on. We also have a plan and estimate from the Empire Cooping Company for the installation of a new system of coops. This, we believe, will give the Iowa State Fair as good a poultry building as will be needed for several years. We have had prepared a preliminary sketch of a map of the grounds, which we would like to have examined and criticized by the board before going further with the work for a permanent map of the grounds.

Our recommendations for appropriations from the legislature for new improvements must be taken up and agreed upon at this time. I believe it is the duty of this board to fully discuss and present to the legislature whatever recommendations for appropriations are necessary to provide proper equipment at the State Fair Grounds. The first question is, not what will be given, but rather what is most needed. One thing is sure; past experience convinces me that the legislature will not appropriate funds for improvements that are not presented to them. The equipment at the Iowa State Fair and Exposition Grounds is far from adequate to house the exhibits and care for the crowds. While it will probably be many years before it is complete, we should use every means to secure additional improvements as fast as possible. I will mention here a few of the buildings and improvements that should be made with the least possible delay: Amphitheater, moving of race track and speed barns, additional land (either on the north or south), completion of building for the showing of swine, extensions and additional equipment to the light and power plant, sewer system, sheep barn, mezzanine story in the Agricultural Building for a pure food exhibit, completion of horse barn, completion of proposed cattle barn, a manufacturers and liberal arts building, implement and machinery building, a combined horticultural and floricultural building, a dairy building, an auditorium or open pavilion in which meetings of various kinds could be held. Of the many improvements named probably the first to have your consideration will be the amphitheater. During the past fall our president, architect and myself visited several cities where amphitheaters had recently been erected, for the purpose of studying plans and methods of construction. These visits, we believe, were not without profit. We gathered many excellent ideas which will be of material advantage to us in preparing plans for an amphitheater at the Iowa State Fair Grounds. Among other things we found that the idea of building a double-deck stand was impracticable. We also found that our opinion as to the cost of construction had not been placed any too high. The stand we found upon the Canadian National Exhibition grounds at Toronto comes about as near being what we want as any we saw. It is 1673 feet long by 108 feet wide, and seats 16,400 people. It cost complete about $240,000.00. It is of steel construction with cement floors and iron stairways; not a piece of wood being used except the sheeting for the roof and window and door frames. The plan our architect has prepared is practically a duplicate of this building. We have, however, had changes made in the entrances and added a mezzanine story, which we believe will give us a better stand. We had thought the board should recommend the building of a stand only two-thirds the size at this time. This would give us a seating capacity of about 11,000. By setting it back one hundred feet from the track we would have additional room for from two to four thousand people. I have not yet received the estimate of cost from the architect, but it will not be less than $150,000.00.

As to other improvements, they can be discussed in an informal manner by the board and some conclusion arrived at upon which to base our recommendations to the legislature.

It is our opinion that a better system of ordering supplies, material, etc., should be used. All such ordered should come through a central head, presumably the secretary, that a better check may be kept upon our bills.

The revision of the premium list should be carefully looked after. I believe we should adopt some plan for the gathering and placing of an agricultural exhibit that would be a credit and of far more educational value than this exhibit now is. I do not mean to criticise the exhibit as made under the present conditions, for I believe it is as good as can be made with the present system. As you know, conditions are very much different in this department than the work in the machinery department where the exhibitor has the advantage of advertising in making a show. Under the present system of paying premiums in the agricultural department there is no inducement for John Smith to make an exhibit other than for the small prize he may secure, or whatever little honor goes with the securing of an award; it is of no advertising value to him. I believe that we should set aside a fund for the purpose of employing competent men to go out over the state of Iowa and gather an exhibit of farm products to be shown in the same manner as our state would at a national exposition. We could make an exhibit, say of alfalfa, in a space twelve by twenty or thirty feet, gathered from all parts of the state, with data in regard to the character of the soil, etc., under which it is grown; have a competent person in charge of this alfalfa exhibit to talk alfalfa at all times during the fair. I believe this would create more interest and do more to promote the growing of alfalfa in our state than all the literature and addresses that have been made within the past ten years. The gathering and making of an exhibit of noxious weeds with a competent person in charge would be very educational. An exhibit of the various varieties of oats, wheat and the various grasses could also be made. In fact, go about it in such a way that we would have an exhibit of Iowa farm products that would not only be a credit to our fair but the state as well. I would not advise that the present method of offering prizes be eliminated entirely, but believe by taking the money now offered upon county exhibits and supplementing it with, say, one thousand dollars additional, a very creditable show could be made. It is quite possible that we could secure the services of the extension department at the Agricultural College to do this work.

Those who seem to be best informed tell us that the classification of our poultry department is not what it should be. An effort should be made to bring out a greater exhibit of Iowa birds.

I wish to take this opportunity of expressing to the members of the board my appreciation for the hearty and cordial support they have given me in the past. I have tried to do my full duty as I saw it, which I shall continue to do as long as it may be your pleasure to have me serve you, or that I remain in my present position. My observation of the management of the fairs I have visited has been that at no place will you find the unanimity which prevails among the members of our board in the management of the fair. To this more than anything else I attribute the success of the institution and good will of the exhibitors. With this continued feeling of good fellowship among the members of the board I predict a bright future for the Iowa State Fair and Exposition.

On motion of Mr. Packard a committee of three was appointed to consider certain recommendations made in the Secretary's report, especially as to asking the legislature to authorize the publication of bulletins, amending the present statute with reference to the gathering of agricultural statistics, changing the method of filing farmers' institute reports, for a division of publicity and advertising; said committee to make their report to the Board on Friday, December 11, 1909. The President appointed on the above named committee: Messrs. Packard, Curtiss and Wright.

On motion the Board adjourned until 1:30 P. M.

AFTERNOON SESSION.

Board met pursuant to adjournment with members present as at morning session.

Prof. H. E. Summers, State Entomologist, appeared before the Board and asked for their indorsement of the bill now before Congress for preventing the manufacture, sale or transportation of adulterated or misbranded insecticides and fungicides. The following resolution was offered by Mr. Wright and was adopted by the Board:

Resolved, That the Iowa State Board of Agriculture recommend to Congress early favorable consideration and adoption of legislation for preventing the manufacture, sale or transportation of adulterated or misbranded insecticides and fungicides as embodied in H. F. No. 21318.

Prof. A. V. Storms of Ames appeared before the Board and made an address in the interest of and for a school exhibit at the State Fair.

On motion it was agreed that the State Board of Agriculture would recommend to the legislature that appropriations be made for the following purposes:

For the purchase of additional land.

For the building of an amphitheatre, moving track and speed barns.

For the completion of the swine show pavillion; amount of each to be determined when estimates are received.

The following recommendations for appropriation in the various departments of the fair were offered:

For increase in amount of judging contests	$ 500.00
For increase in Horse Department	600.00
For increase in Cattle Department	122.00
For increase in Sheep Department	112.00
For increase in Swine Department	240.00
For increase in Poultry Department	300.00
For premiums on dogs	100.00
For increase in amount of premiums in Horticultural Department	80.00
For increase in amount of premiums in Floricultural Department	90.00
For educational farm crops exhibit	2,000.00
For a school exhibit	1,000.00
For Iowa State College exhibit not to exceed	1,000.00
For increase in premiums in Apiary Department	61.00
	$6,205.00

A motion was made and adopted authorizing the Executive Committee to arrange the list of Superintendents for the next year and report same to the Board at the morning session, December 11th.

On motion the Board adjourned until 9 A. M. Friday.

MEETING OF STATE BOARD OF AGRICULTURE.

Friday, December 11, 1908.

Board met at 9 o'clock A. M. pursuant to adjournment with President Cameron in the chair. The roll call showed the following members present: Cameron, Brown, Simpson, Gilbertson, Reeves, Johnston, Curtin, Packard, Curtiss, Ledgerwood, McDonald, Olson, Pike and Wright.

Minutes of the previous meeting were read and approved.

The following resolutions were presented by the Committee on Resolutions and ordered spread upon the records of the Department:

REPORT OF COMMITTEE ON RESOLUTIONS.

Your committee on Resolutions begs leave to submit the following:

WHEREAS, The Supreme Master has called to rest our friend John A. Evans, formerly President of the Iowa State Agricultural Society, therefore be it

Resolved, That this board has heard with deep regret of the loss of a valued friend and supporter and takes this occasion to testify its appreciation of his public services; be it further

Resolved, That these resolutions be spread upon the records of this Department of State and that a copy thereof be sent to the members of the family of the deceased.

(Signed)
JOHN LEDGERWOOD,
M. MCDONALD,
Committee on Resolutions.

Mr. Packard, as chairman of the special committee appointed to report upon the recommendations made by the Secretary, made the following report:

To the Members of the State Board of Agriculture:

Your committee fully endorses the recommendation of the Secretary with reference to the collection and dissemination of statistics. We do not indorse his suggestion with reference to the publication of the Year Book biennially and would recommend that no change be asked with reference to same. We indorse his recommendation with reference to the filing of reports by county farmers' institutes. We further indorse his recommendation for the creating of a division of publicity and advertising under the Department of Agriculture as a sensible way to bring the resources of the state to the notice of the public, and strongly recommend the need of legislation for this purpose.

Mr. Curtiss moved that the report of the committee be adopted, that the committee be continued and instructed to formulate bills for presentation to the Legislature for such revision and additional laws as necessary to bring about the recommendations, and that in addition an additional annual support fund of $2,600 annually be recommended; that the President and Secretary be added to said committee. Motion seconded by Mr. Ledgerwood and adopted.

The following list of assignment of superintendents for the next year was reported by the Executive Comimttee:

Police regulation	M. McDonald
Tickets	C. W. Phillips
Admissions	O. A. Olson
Concessions and privileges	W. C. Brown
Live stock sanitation	Dr. P. O. Koto
Horses, ponies and mules	C. F. Curtiss
Speed	A. L. Denio
Cattle	S. P. Packard
Swine	R. S. Johnston
Sheep	H. L. Pike
Poultry	H. L. Pike
Implements and machinery	John Ledgerwood
Agriculture	E. J. Curtin
Pantry stores and apiary	E. J. Curtin
Dairy	H. R. Wright
Floriculture	Wesley Greene
Horticulture	E. M. Reeves
Fine arts, etc.	T. C. Legoe

Mr. Simpson moved that $1,000.00, or so much thereof as may be necessary, be appropriated for a school exhibit, classification to be made out by the Secretary and a Superintendent. Seconded by Mr. Olson. Motion prevailed.

Mr. Simpson moved that Prof. A. V. Storms of Ames be selected as Superintendent in charge of the school exhibit. Seconded by Mr. Ledgerwood. Motion prevailed.

Mr. Simpson moved that it be the sense of this Board that they duplicate any amount that is appropriated by the Board of Trustees of the Iowa State College of Agriculture toward installing and maintaining an exhibit of the various departments of the college at the fair of 1909, up to $1,000.00. Seconded by Mr. Olson. Motion prevailed.

Mr. Curtiss moved that $2,000.00, or as much thereof as may be necessary, be set aside for strengthening the exhibit in the agricultural department, to be used in revising the premium list or for the expenses of securing exhibits as may be needed, and that the committee be appointed to act with the Superintendent in revising the premium list.

President appointed as committee on per diem and mileage: Messrs. Johnston, Olson and Ledgerwood.

On motion of Mr. Packard, Board adjourned until 1:30 P. M.

AFTERNOON SESSION.

Board met at 1:30 P. M. pursuant to adjournment with members present as at morning session, also Dr. P. O. Koto.

Minutes of the morning session were read and approved.

On motion, which was unanimously adopted, the following schedule of pay for employes at the fair of 1909 was agreed upon:

Marshals (they to furnish their own horses and feed)	$45.00 each
Mounted police (they to furnish their own horses and feed	$3.50 per day
Foot police and guards	2.50 per day
Sergeants of police	3.50 per day
Assistant chief of police	3.75 per day
Ticket takers	2.50 per day
Captain of police—admissions department	5.00 per day
Captains of gates	3.50 per day
Ticket sellers	3.25 per day
Assistant superintendents (without railway fare)	4.00 per day

All other assistants or help to be paid such amount as shall be agreed upon by the board or executive committee.

Mr. McDonald moved that the four marshals heretofore serving be reappointed. An amendment was offered reducing the number to three and that the Board proceed to elect same by ballot, the three receiving the highest number of votes to be declared elected. Amendment accepted and motion prevailed.

Chas. Akes of Leon, John R. Waller of Rockford, Carl Shields of Afton, T. J. Hudson of Winterset and T. D. Doke of Bloomfield were nominated.

The ballot resulted as follows: Akes, 11; Hudson, 11; Shields, 7; Doke, 5; Waller, 3. Mr. Akes, Mr. Hudson and Mr. Shields were declared duly elected marshals for the ensuing year.

Mr. Packard submitted the report of the Committee on Adulteration of Foods, Seeds and Other Products, as follows:

REPORT OF THE COMMITTEE ON ADULTERATION OF FOODS, SEEDS, AND OTHER PRODUCTS.

Your committee has had up for the last two years the question of weeds of the state in public places. Through the office of the Experiment Station about six thousand (6,000) question blanks have been sent out and a very considerable number of replies have been received showing the prevalence of various weeds throughout the state. These replies covered all portions of the state, and about three-fourths of them report the presence of quack grass, wild mustard, curled and smooth dock, cockle burs and squirrel-tail grass; about one-half of them report the presence of Canada thistle; about three-fourths of the replies report the presence of these noxious weeds upon the highways and a great many of them report their presence upon the railroad right-of-way and private grounds.

The state already has some weed legislation, part of which is as drastic in form as can be devised. The statute makes a failure to destroy Canada thistle, an offense punishable by a fine not to exceed one hundred dollars ($100.00), but as a matter of fact the law has never been enforced and might just as well not be on the statute books at all so far as any actual effect it has had on the weed situation.

As a result of the investigation made and of our understanding of the present inadequacy of existing statutes, a bill has been drawn of which an outline is given here:

The bill makes it the duty of every owner or occupant of lands to entirely destroy the weeds named in the law, which are quack grass, Canada thistle, cockle bur, wild mustard, sour and curled dock, smooth dock, squirrel tail grass and wild parsnip. Notice having been given by any citizen to the township trustee, or the mayor, city clerk, or street commissioner of a city, of the presence of any noxious weeds such officers are charged with the duty of giving official notice to the owner or occupant of the land to destroy the same within ten days. If the owner or occupant is not to be found, or if the owner or occupant neglects to destroy the weeds, it becomes the duty of the official giving the notice to cause the weeds to be destroyed and all costs may be levied as a special tax against the property upon which such weeds were destroyed and collected as other taxes.

The board of supervisors may appoint a weed inspector for each township to report on the presence of noxious weeds and give notice to owners requiring the destruction of the weeds. Compensation is to be fixed by the board of supervisors and paid out of the county fund. It is made the duty of road supervisors, or other officers responsible for the care of highways, to destroy noxious weeds mentioned in the law and to cut all weeds in the highway in time to prevent them from seeding. It is made unlawful to transport along the highway any straw, hay or nursery stock which may contain any seeds, roots, or root-stalks, of the weeds mentioned in the act.

The statute makes the botanist of the State Agricultural Experiment Station to the state botanist and makes it his duty to investigate and ascertain the presence and extent of noxious weeds throughout the state and with the approval of the director of the Experiment Station and the secretary of the State Department of Agriculture to make recommendations for methods for their destruction, and to report by means of bulletins to the State Department of Agriculture. The board of supervisors of each county is required to report to the state botanist the extent of the distribution of noxious weeds, and expenses incurred in their destruction, all of which the state botanist is expected to report to the Department of Agriculture and to be issued in a bulletin by the Department of Agriculture.

The foregoing report is submitted for the approval of this board, and your committee recommends that a copy of Professor Pammel's report and of this report and a copy of the proposed law be called to the attention of the Governor of the state by your committee.

Respectfully submitted,
(Signed) S. B. PACKARD,
C. F. CURTISS,
H. R. WRIGHT,
Committee.

(NOTE.—The weed legislation as finally enacted by the Thirty-third General Assembly will be found in Part XV of this Year Book.)

A REPORT ON AN INVESTIGATION OF WEEDS FOUND ALONG HIGHWAYS, FIELDS AND MEADOWS OF THE STATE UNDER THE DIRECTION OF THE STATE DEPARTMENT OF AGRICULTURE.

I beg leave to make the following report concerning an investigation of weeds along highways.

Shortly after the last session of the legislature the committee met on call of Governor Packard in the office of Prof. C. F. Curtiss, at Ames, and agreed upon sending out a circular. Thereupon Professor Curtiss of Ames sent out a circular of inquiry in regard to weeds to supervisors and others in the state. The answers received to the circulars have been most satisfactory. In addition to this circular the writer has been in communication with hundreds of farmers in the state on this topic and he has utilized the information received from farmers in preparing this report.

The circular sent out by Professor Curtiss contained the following queries:

1. Are any of the following named weeds, or other weeds that are difficult to kill, found in your vicinity? Please check those that occur or add the names of others:

Quack Grass, Wild Mustard, Canada Thistle, Wild Oats, Sweet Clover, Clover Dodder, Alfalfa Dodder, Field Dodder, Cowbane, Corn Cockle, Squirrel-tail, Marsh Elder, Cocklebur, Curled Dock, Smooth Dock, Horse Nettle, Jimson Weed.

2. If there are any noxious weeds in your vicinity, of which you do not know the name, please send samples to Prof. L. H. Pammel, Ames, Iowa, for identification.

3. Are the weeds you have named found in the highways? Railway right-of-way? Private grounds?

4. What methods that have been used to eradicate these weeds have failed?

5. What methods have been used successfully?

I may say that quite a number of persons sent specimens of weeds in response to the queries. Many sent full replies and that most of them stated that the weeds occurred on highways, private grounds and railway right-of-ways, and that as a rule about one-half of the correspondents gave short methods of extermination in response to queries numbers four and five.

Cocklebur.

Of the list of weeds, Cocklebur has been reported from nearly every county in the state, but it is more abundant in southern than in northern Iowa. More replies were, however, received from Sioux, Montgomery, Guthrie, Fayette, Linn and Benton counties. The weed is abundant in the state, not only along highways but also in fields.

Canada Thistle.

The replies indicate that Canada Thistle is widely scattered in the state but not abundant in any one place. From the replies received it would appear that it is abundant in the following counties: Winnebago, Winneshiek, Cass, Story, Cerro Gordo, in no case, however, except in Hardin county, does the weed cover large areas.

Wild Mustard.

This weed is widely scattered in the state, being most abundant in northern Iowa, less frequent in northeastern and southern Iowa. Not only reported as occurring along roadsides but in fields. It appears to be a legacy from flax culture and is being perpetuated by the sowing of oats that contains mustard seed. Reported from Sioux, Lyon, Emmet, Winnebago, Cerro Gordo and Sac counties.

Quack Grass.

The greatest interest seems to have been manifested in Quack Grass which has been reported from every county in northern Iowa and in many other counties. It is most abundant in the three northern tiers of counties. It seems to have spread not only from elevators, seed grain but straw which is transported from farm to farm. Its spread in one case in Story county can be traced to a farmer who sold his straw to neighbors. In this case it can be traced along the highway for several miles in each direction. It is without doubt the most serious weed pest in Iowa to-day. The counties most frequently reported are Winnebago, Hancock, Cerro Gordo, Fayette, Winneshiek, O'Brien; only reported infrequently from southern Iowa.

Squirrel-tail Grass.

This weed no doubt occurs in every county in the state, although a few counties do not report it; the greatest number of replies have been received from Cass, Story, Winneshiek, Winnebago, Fayette, Greene, Linn and Harrison counties. It is reported not only on highways but also in fields and along railways.

Sweet Clover.

Correspondents generally reported sweet clover, perhaps more abundant in the western and central parts of Iowa than in eastern and northern Iowa. It is most frequently reported in Woodbury, Pottawattamie, Humboldt, Fayette, Greene, Montgomery, Story and Webster counties.

Marsh Elder.

This weed is general in western Iowa along the Missouri where it largely takes the place of the Greater Ragweed. From the Missouri river it spreads eastward, reaching Cerro Gordo and Boone counties. Found in fields and along highways.

Horse Nettle.

This perennial weed is distinctly southern, common thoughout southern Iowa but reaching northward to the Minnesota line. Reported from fields and along highways. This weed is as difficult to exterminate as Canada Thistle.

Sour or Curled Dock.

Quite generally reported from all parts of the state, perhaps more common in eastern Iowa. Found along highways and in fields, especially meadows. Most frequently reported from Winneshiek, Pottawattamie, Montgomery, Fayette, Story and Cass counties.

Smooth Dock.

It is reported less frequently than Curled Dock. Less common along roadsides than Sour Dock. Most abundant in eastern Iowa. The counties from which the weed is most frequently reported are Winneshiek, Fayette, Pottawattamie and Montgomery.

Cowbane.

This poisonous perennial weed is especially common in northern Iowa, from Ames northward to the Minnesota line and eastward to Benton and westward to Greene county. Occurs in low meadows and along highways.

Dodders.

Have been reported from a few widely scattered counties in the state on clover and alfalfa.

Wild Oat.

Not abundant in the state, only reported from a few counties in northern and western Iowa.

Corn Cockle.

Widely scattered in the state, especially where winter and summer wheat are cultivated. The absence of its occurrence in southern Iowa is because the reports from that part of the state are less complete.

Jimson Weed.

This weed is quite general in the state but less common along highways, commonly found near barns, and in waste places; more frequently reported from southern Iowa than elsewhere.

Other Weeds Reported.

Other weeds have been reported a varying number of times. Western Sunflower, Common Annual Sunflower, Wild Liqorice, Horseweed, Spotted Spurge, Goosefoot, Wild Hemp, Northern Nut Grass, European Morning Glory, Evening Catchfly, Yellow Hop Clover, Dandelion, Small Chickweed, Bristly Foxtail, Buffalo Bur, Tumbling Mustard, Sow Thistle, Five-Finger, Hedge Mustard, Russian Thistle, Green Foxtail, Meadow Sunflower, Blackeyed Susan, Sheep Sorrel, Buckhorn, Canadian Blue Grass, Wild Parsnip, Wild Buckwheat, Old Witch Grass, Bracted Plantain, Wild Rose, Smooth Crab Grass, Pennsylvania Smartweed, Lady's Thumb, Smartweed (*Polygonum lapathifolium*), Sprouting Crab Grass, Yellow Sorrel, Marsh Cress (*Nasturtium palustre*), Horse Mint, Mexican Dropseed Grass, Wild Timothy, or Dropseed Grass, Black Medick, Yellow Sweet Clover, Diffuse Dropseed Grass, Prickly Lettuce, Small Peppergrass, Shoo-fly, Artichoke, Velvet Weed, Wild Morning Glory, and Milkweed.

Velvet Weed.

This weed was more frequently reported outside of the list than any of the other weeds. It is abundant in many fields and along roadsides. It has occasioned much alarm because of the seeming difficulty of exterminating it, the seeds retain their vitality for so long a period in the soil.

Morning Glory.

This weed is generally reported from many parts of the state in fields and along highways.

Russian Thistle.

This weed was mentioned a number of times as a troublesome weed but not as much alarm is felt for this weed as many others.

Greater Ragweed.

Greater Ragweed was reported quite frequently and certainly is common, especially as a roadside weed in all parts of the state, it being one of the most conspicuous roadside weeds of the state.

Smaller Ragweed.

This weed was common everywhere in the state, not only along roadsides but in the fields, but less requently reported than the Greater Ragweed.

Bull Thistle.

Commonly reported from many different sections of the state, especially pastures. This weed is certainly more common and abundant than the Canada Thistle and because of its abundance perhaps does more injury.

Shoe-String or Muhlenberg Smartweed.

Widely scattered in many different sections of the state and frequently reported as a troublesome persistent perennial weed, especially in low grounds.

Dropseed Grass.

The Dropseed Grasses were not on the list. This grass has been sent to me by hundreds during the last two seasons, largely because it was thought to be Quack Grass. The Dropseed Grasses are abundant and are widely distributed throughout the state.

Your chairman has requested me to give particular attention to some of the methods of extermination of weeds. One of the most potent factors in the spread of weeds in the state is the carelessness on the part of owners with reference to the destruction of weeds. No other system has done as much as the present system of leasing farms; some renters are good farmers, they clean the crop as carefully as the owner would, but many of the leased farms are nurseries for the growing of weeds and from these places spread to adjacent farms.

There are two ways in which weeds spread, namely by the production of seed and by vegetative propagation. The habit of plants determine whether the weed is readily destroyed or not. The Bull Thistle, Foxtail, and Ragweed are all readily destroyed because of their annual or biennial nature, on the other hand Quack Grass, Canada Thistle, Morning Glory and Horse Nettle are not readily destroyed because of their perennial character. Again, the seed habit and its manner of dispersal influences the abundance of the weed. The seeds of the Bull Thistle, Dandelion, Wild Barley, are scattered widely by the wind and become a menace to a clean field because the seeds are scattered by the wind.

We will discuss this subject under the following heads: Clean seed; garden and ornamental plants; railways; highways; rotation of crops; treatment for annual crops; treatment for biennial weeds; treatment for special weeds; quack grass; treatment with chemicals; Canada thistle; morning glory; milkweed; horse nettle; dropseed grass; cocklebur; sqirreltail grass; wild barley; Indian mallow or butter print.

Clean Seed. An excellent way to prevent the spread of many of the noxious weeds is to plant only clean seed. Throughout the state of Iowa there are evidences everywhere of weeds, which have been scattered by seed. Rye, Hop Clover, Wild Carrot, Buckhorn, Mustard, Bracted Plantain, and Dock which are scattered by means of seeds of various crops in which these seeds are found. For instance, in many parts of the state the Wild Carrot and Buckhorn are common in clover meadows. These weeds have been found so frequently in clover seed that there can be no doubt that the most important means of scattering has been by means of these impure seeds. Again, Wild Oats in a few places in northern Iowa is plentiful and is scattered here largely by means of cultivated oats. Mustard has been widely distributed in the state by sowing the seeds that contain the mustard seed. In northeastern Iowa we observed during the last summer considerable Yellow Hop Clover along the roadsides. This had evidently been scattered by clover seed from adjacent fields. Here and there we have occasional reports of the abundance of Dodder upon clover and alfalfa, and the occurrence of Chicory and Knapweed in alfalfa fields.

All of this goes to prove the necessity of enforcing the law passed at the last session of the legislature with reference to the sale of agricultural seeds, and the law should include garden seeds as well. I believe that I am safe in saying that the majority of the Iowa seedsmen are trying to live up to the present law and that we should co-operate with these people as much as possible and that much good has been derived from the law in an educational way.

Garden and Ornamental Plants. In many parts of the state there are found weeds of very dangerous classes which have been largely introduced by means of the garden, that is to say, these weeds were at first planted for ornamental purposes and have now spread to the fields. As an illustration the Bouncing Betty and Toad-flax, which are very troublesome weeds in various places in the northern part of the state. These perennial weeds are very difficult to destroy, especially the Toad-flax. Another illustration is the common European Bindweed and the Cypress Spurge or Cemetery Weed. Of the annual class we have the Shoo-fly or Bladder Ketmia, which Mr. Dudley Stone, of North Liberty, thinks is one of the worst weeds he has upon his place. A weed of this kind is troublesome because it produces a large number of seeds and these seeds retain their vitality for a long time in the soil. We should therefore take into account this, as an element in the distribution of pernicious weeds, and whenever one of these graden plants begins to spread seriously efforts should be made to exterminate the weed.

Railways. The railways are no doubt responsible for the scattering of a number of weeds, the seeds dropping from the cars in transit. I have also understood that in recent years the railways purchase the refuse material from the seed merchants in the large cities and sow it along the right-of-way of the railway for the purpose of holding the soil. In many cases where this has been done bad weeds have been introduced. It is particularly noticeable in this connection that Quack Grass may always be found in the majority of cases in counties where it occurs, near the elevator. No doubt when the railways transport the grain they often scatter Quack Grass. The common practice of most railroads of cutting their weeds in July is certainly an excellent one and certainly exterminates a large number of the annual weeds. However, this cleaning up should be done earlier in the season.

Highways. A rapid survey of the highways of the state would lead one to say that the highways are an important feature in the distribution of weeds over the farms of Iowa. There is scarcely a mile of highway anywhere in the state but what contains nearly all of the weeds mentioned in the circular sent out by the Department of Agriculture. Of course, the Canada Thistle would be omitted as this is not so very common along our highways and you can nearly always find all of the other weeds except the Quack Grass, Jimson Weed, and Mallow or Butterprint.

That the highway can be cleaned or freed of weeds, especially the annual type, I know. In northeastern Iowa in Allamakee and Winneshiek counties they have made an effort to introduce clover, timothy, and blue grass to fill the places along the highways and here one finds little evidence of Cocklebur, Greater Ragweed. By cutting the weeds once before the first of July and again in August and sowing the roadsides with clover, timothy, and blue grass, much can be done toward the eradication of these weeds.

There is sufficient law on the statute book now, but apparently it is not enforced except in a few instances.

One of the common features in the distribution of these weeds is perhaps the carrying of grain that contains the seeds of bad weeds. Thus I have seen scattered along the highway for several miles Quack Grass which came from an infected field. It should be made unlawful for anyone to transport this material from one farm to another.

Rotation of Crops. No better way of exterminating weeds is known than by the rotation of crops, followed by grain culture. Everyone has observed, perhaps, that where the sod of a meadow is thoroughly pulverized and then planted to corn it has less weeds than a field that has been in small grain or in corn the previous season. During the interval during which the meadow has been in pasture many of the weed seeds have been destroyed. If the meadow is then sowed with corn the second year it can be planted with small grain but the grain should only be sown on a comparatively clean field. If the oats have been removed it would be a good thing to allow the field to be used one year more for a grain crop and then it can be sown with clover and brought into a timothy meadow gradually; in this case a large number of the ordinary annual weeds will be exterminated.

Treatment for Annual Weeds. The most important point in connection with annual weeds is to prevent the formation of seeds. Cultivation of a field should be thorough at all times. The best time to kill these annual weeds is when they are young. The roots of all seedling plants are readily killed when exposed for a short time to the sun. A field or garden should be plowed, then brought into a good state of tilth by using the harrow. When planted with small grain or any other crop, a little more work in the spring may mean the saving of much labor later. All of the annual weeds mentioned in the list of most troublesome weeds should be treated in this way. It may be more difficult to destroy the older plants of Purslane but the young seedlings are readily destroyed with a solution of iron sulphate or copper sulphate.

Treatment for Biennial Weeds. The biennial weeds are not nearly so numerous in kind as the annual or perennial and are much more readily destroyed than the latter. The Bull Thistle and Burdock, and other biennial weeds of this character are readily destroyed by cutting the plants off a few inches below the surface of the ground. A small spade will cut the plants off readily. In cutting, of course, it is essential to cut the root below the buds. The Bull Thistle produces a mat of leaves and when this is cut off just below the surface of the ground, the Bull Thistle will cause no more trouble.

Treatment for Perennial Weeds. It is difficult to suggest any one line of treatment for perennial weeds but in general one must take into account the habits of the plant. For instance, Quack Grass must be treated very differently than Canada Thistle or Milkweed. In many cases the summer fallow or frequent and shallow cultivation can be resorted to and will be found very effective. For instance, a field containing Canada Thistle and Morning Glory should be plowed in the spring, disced and harrowed and the process repeated at least once a week. In some cases perennial weeds may be held in check by sowing thickly to some leguminous crop like clover, millet, or sorghum and buckwheat and rape.

Quack Grass. Quack Grass can be killed, I am certain from our experiments. A good plan is to sow thickly with some crop like millet, sorghum, buckwheat or clover. When the crop is removed plow deeply. The roots of Quack Grass are all near the surface of the ground, very few are beyond a depth of four inches. We found that few roots can push through the soil beyond six inches. None of the roots were able to push through a soil when covered twelve inches. Where Quack Grass is abundant the soil should never be planted with corn because the cultivator soon spreads the weed over the field. Mr. E. J. Gumbert, of Walnut, Iowa, gives his method as follows:

The land was given a shallow plowing late in the fall of 1906. In the early spring of 1907 it was disced as soon as the frost was out of the ground and then kept the cultivator and harrow on it nearly every week until about the 20th of May, then it was plowed deeper than before, then disced and harrowed and planted to corn, then cross harrowed and the corn plowed five times, sowing rape before the last cultivation. The corn was cut in September and the ground plowed late in the fall and again in the spring of 1908, harrowed and planted corn on the 20th of May and harrowed twice.

Tarred paper can be used to advantage on a small patch. The edges of the paper should overlap and the edges covered with earth. The Quack Grass should be covered at least six months. When the land is badly infested it may be a good plan to summer fallow. The land should be plowed, harrowed to expose the roots to the sun, then disc. This method of discing and harrowing every week is a good one and by the end of the season little Quack Grass will remain. This weed will not prove troublesome where deep plowing is resorted to.

Canada Thistle. The Canada Thistle can be treated with sodium arsenite according to Professor Bolley. No other chemicals, so far as our experiments extend, are efficacious in entirely destroying this weed. Carbolic acid only partially destroys the roots and the plants shoot up again from below the point of injury, but by repeating the process the Canada Thistle can ultimately be exterminated. A good method to eradicate the weed is to plow shallow and cultivate frequently during the summer. The roots of the Canada Thistle extend deeply down into the soil, hence for this reason deep cultiviation will be of no avail. After turning the soil over after plowing, the soil should be dragged and the roots exposed to the sun and removed, when possible. It may be necessary to run over the field with a hoe and to watch the stray plants which appear. This method was tried on a patch several years ago and no Canada Thistles have since made their appearance in this place. Various crops, such as clover and sorghum are said to be efficacious in subduing the thistles.

The treatment generally recommended by the persons sending replies in answer to the circular, is thorough cultivation. Give shallow plowing, deep plowing will be of no avail because the roots sprout twelve to fifteen inches below the surface of the ground. The land should be thoroughly disced, harrowed, and then cultivated and any plants appearing should be cut with a hoe. Where the patch is not a large one it would be better to summer fallow. The weed has been held in check to a considerable extent in some portions of the East by means of a fungus which is parasitic upon the leaves. Tarred paper has been used with success. Carbolic acid is not as effective as sodium arsenite, but sodium arsenite is rather dangerous to use especially if cattle have access to any part of the plot where the weeds grow and application is made. Salt has proved successful where it is applied in considerable amounts around the roots of the plant and cattle and sheep are given access to it.

Morning Glory. Morning Glory is not as pernicious in its character as Canada Thistle, Quack Grass, or Horse Nettle. The best treatment that can be given it is to turn it into pasture. Cattle, sheep, and hogs are very effective in keeping the weed down. One correspondent thinks that four years in pasture will keep it in check. The plowing should be thorough, discing, and harrowing, or hoeing as often as the weeds make their appearance. Millet, sorghum, and buckwheat are effective in keeping the weed down.

Milkweed. Milkweed can be treated very much like the Morning Glory, and apparently there is nothing better for its treatment than to put it in pasture. The Milkweeds growing in a pasture or meadow are usually small. The plant has a wonderful capacity for spreading. The roots, at times, may be found fourteen feet away from the parent plant and at numerous points they produce new shoots. A rotation recommended for Milkweed is as follows: oats one year, clover one year, corn two years, then pasture, and generally after the second year it is not troublesome in the pasture.

Horse Nettle. No other weed is so troublesome with the exception of Canada Thistle, as is the Horse Nettle. The spiny character of its stem makes it particularly objectionable and moreover the plant is poisonous. It is a deep rooted perennial, extending from two to four feet down into the soil and every severed root throws up a new shoot. The best method for exterminating is to give thorough cultivation, this can be shallow, the roots being exposed to the sun and allowed to dry. If in a field of oats or wheat, it should be plowed as soon as the grain is removed, then disced and harrowed, and this kept up until frost. The field should not be cultivated with corn unless it can be followed with the hoe, as the cultivator is sure to spread the weed over the field.

Dropseed Grass. Dropseed Grass may be exterminated by ordinary cultivation. If it is abundant in a field it should be plowed after the grain is removed, then disced and harrowed. The roots of this plant are clustered. These roots are readily destroyed upon exposure to the sun.

SOME ANNUAL WEEDS.

Cocklebur. Cocklebur is a serious menace to cultivated crops in many parts of the state. The seed habit of this plant differs very materially from any of the other annual weeds. Each bur contains two seeds, one seed germinates one year and the other the second year, so that no matter how careful you are in trying to keep the field clean for one season you cannot exerminate the weed in a single season. If the cockleburs occur in corn fields the weeds should be removed with the cultivator as much as possible and this should be followed with a hoe but in the majority of cases it is possible if taken in time to remove these weeds without the hoe. The field should then be sown the next season with a small grain crop, like barley or rye or oats and then brought into a clover meadow and finally into timothy and blue grass. How long the seeds of cocklebur retain their vitality is not definitely known but it is certain that where this kind of rotation has been followed that the cocklebur is not a troublesome weed.

Fox-tail. It is not generally recognized, but it is probably true that more money is spent in the extermination of fox-tails than any other class of weeds we have in the State of Iowa, yet they are all easily destroyed. One of the best and most effective methods of destroying the Fox-tail is by plowing the small grain field as soon as the grain is removed. If this is not done a large amount of seed is produced. After this plowing in the fall the field should be disced and harrowed in the spring and then planted to corn. The corn should be cultivated as frequently as possible, at least four or five times. This method should prove entirely effective for the destruction of Fox-tail and pigeon grass.

Squirrel-tail. Squirrel-tail or Wild Barley is a most pernicious weed along road sides and in pastures and meadows; pernicious because it not only prevents the growth of the better grasses but it is injurious to live stock. As this weed is most common in the pasture, the best way to treat it is to mow the pasture before the grass has matured its seed. Since this weed is an annual, or winter annual, this should effectively dispose of the plant were it not for the fact that the seed is blown in from neighboring fields and roadsides. Cultivation will readily destroy the weed and where it is abundant in fields shallow cultivation followed by the disc and harrow should be effective.

Mustard. The first and most important consideration in connection with the extermination of mustard is that the oats or wheat should be freed from mustard seed. Then this grain should be sown on clean fields, preferably fields that have been in pasture or meadow, or if sown in a corn field there should have been no mustard the previous season. Nothing has done so much to remove the weeds from the fields of northeastern Iowa as the pasture and meadow. Having sown the small grain on a clean field there is always a chance that some of the seeds will retain their vitality in the soil. If much of this mustard should come up then it may become necessary to spray the mustard with iron sulphate and when the mustard is abundant this is a very effective means of destroying the weeds, this material used at the rate of one hundred pounds of the iron sulphate to a barrel of water.

Indian Mallow or Butter Print. Much complaint has come to us about Indian Mallow or Butter Print. This weed, which is very common in many parts of the state, is, of course, readily destroyed by cultivation. The only trouble is that so much of the seed retains its vitality for a considerable length of time, how long has not been definitely determined. The best treatment for this plant is to get the field into a meadow or pasture, leaving it in this condition for a number of years and then planting corn and following the usual rotation.

Mr. S. Braga, Meservey, Iowa, recommends the smothering of Quack Grass with millet, and shallow plowing, and Mr. Burlingame, of Froelich, Iowa, also advocates the smothering of Quack Grass by covering it with two feet of straw and then sow to buckwheat two years in succession. Mr. Flett, of Wright county, also recommends covering and smothering with straw. Mr. F. McGrunder, of Clarkson, thinks the best way to remove Quack Grass is by using the dung fork and getting out all of the roots. Mr. Dows, of Benton county, finds that salt is successful or mulch heavily with straw. Mr. Overholser, of Sibley, Iowa, states that a bad field consisting of a quarter section of Quack Grass, one of the worst infected sections in the county, was planted to millet and buckwheat and in the worst places forks were used to remove the roots, then the field was planted to corn and in this way many of the weeds, including Quack Grass, were removed. According to C. J. Kirby, of Black Hawk county, cockleburs are found mostly on rented farms and the best plan to remove these weeds is to get the land into pasture or meadow. Pasture, especially, if sheep are allowed to graze. According to F. E. Wakeman, he finds that rank weeds should be cut when coming into bloom and in this way they soon disappear, also Bull Thistle and Dock should be cut off early in the season; Velvet Leaf and Squirrel-tail are more persistent weeds. Mr. Lee, of Van Buren county, also finds that Butter-print is hard to exterminate and that Cocklebur, Curled Dock, and Jimson Weed may be killed by persistent cutting below the surface of the ground. Mr. H. R. Albers, of Battle Creek, who had thistles in a pasture (probably woolly thistle) plowed in the fall, disced three times in the spring and planted to corn and cultivated three times and the following year had very little of the thistle. Mr. Greer, of Linn county, recommends the mowing of cucklebur in August, close to the ground and burning and plowing, this has been found very effective. Mr. F. W. Tucker, of Chickasaw county, with reference to Canada Thistle, recommends plowing each week during the summer, with constant effort, plowing and cultivation will kill the weed. Mr. L. J. Philip states that by covering the Canada Thistle with straw in the course of a few years the weed can be destroyed. In regard to mustard, he thinks that Wild Mustard would not be troublesome if clean seed would be sown. Cultivate and pull the mustard when young.

LEGISLATION.

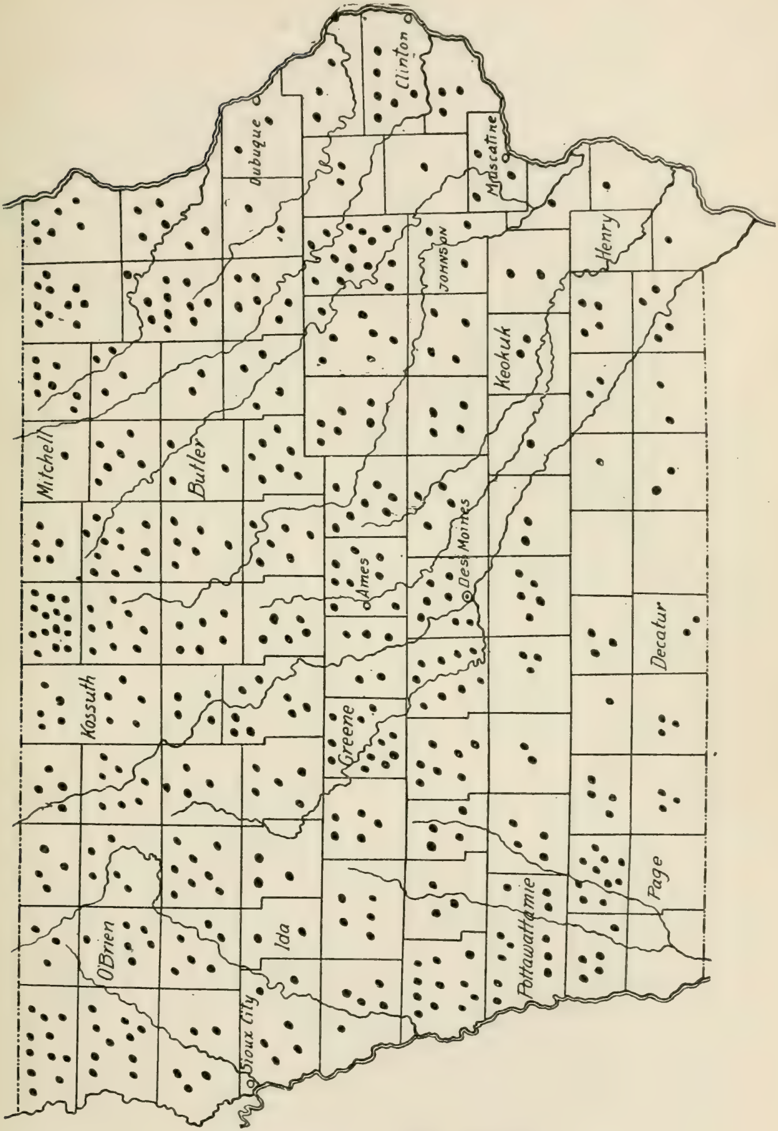
With reference to legislation, may I suggest that while legislation is important, the question of publicity or of making the people acquainted with the importance of weed extermination is vastly more important.

You can go all over the State of Iowa and in every locality Canada Thistle may be found but there are very few prosecutions under the law. I have been written a great many times on this matter and I have said, "Why don't you prosecute?" and I have been told, "Oh. we hate to prosecute a neighbor and the county attorney doesn't care to bring action."

No rigid or fast line can be drawn as to the kind of weeds that should be contained in a weed law. I have drawn up a bill which embodies my ideas on the subject. I have included five weeds because of the urgent demand that was made to have these included but in my judgment it would be better to not mention any weeds but to leave it to a commission.

The accompanying maps will show the abundance and the reports received in regard to a few of the troublesome weeds: Quack Grass, Canada Thistle, Wild Mustard, Squirrel-tail Grass.

L. H. Pammel.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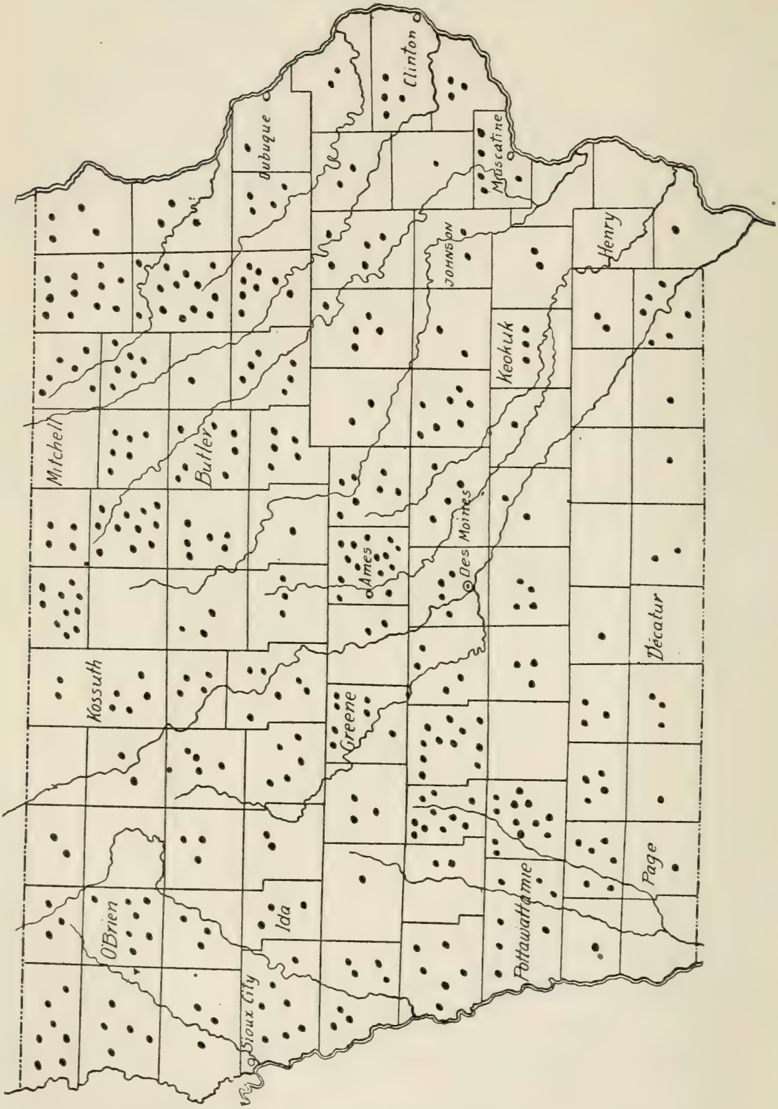
Wild Mustard.--Brassica arvensis.
Each dot represents a report of occurrence.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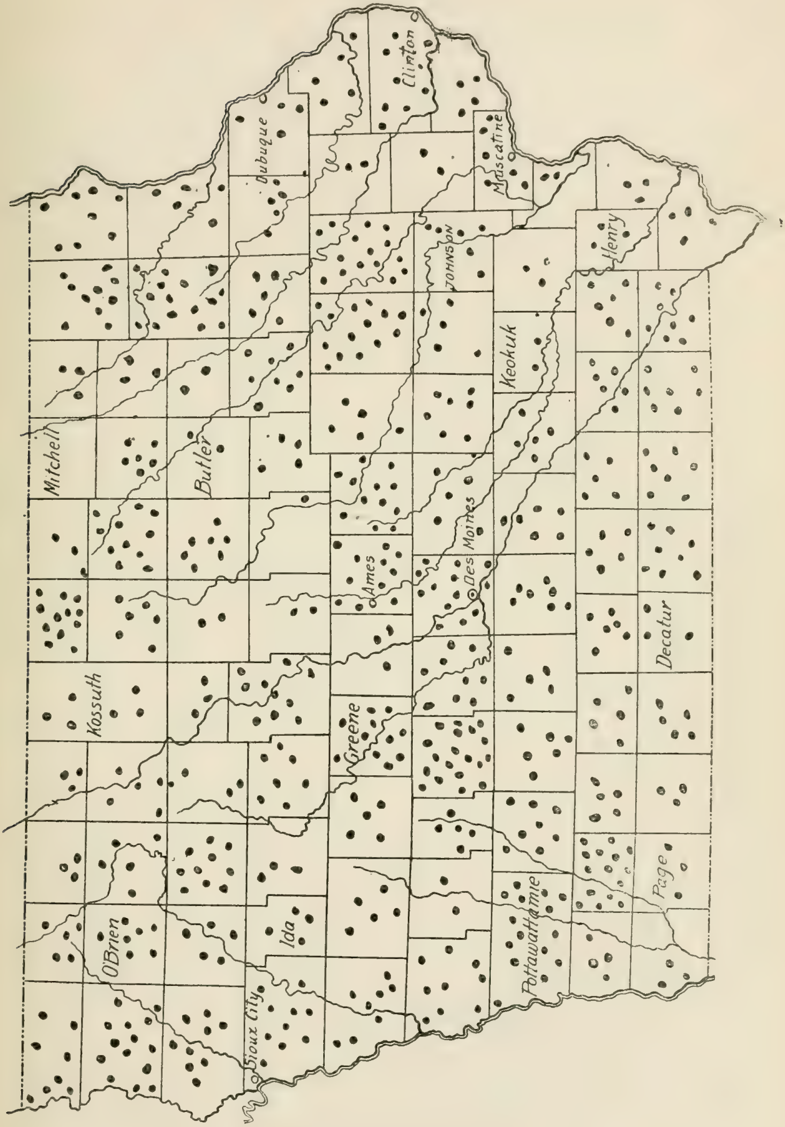
Canada Thistle.—Cnicus arvensis.
Dots represent report of occurrence.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Cockle-bur.—Xanthium canadense.
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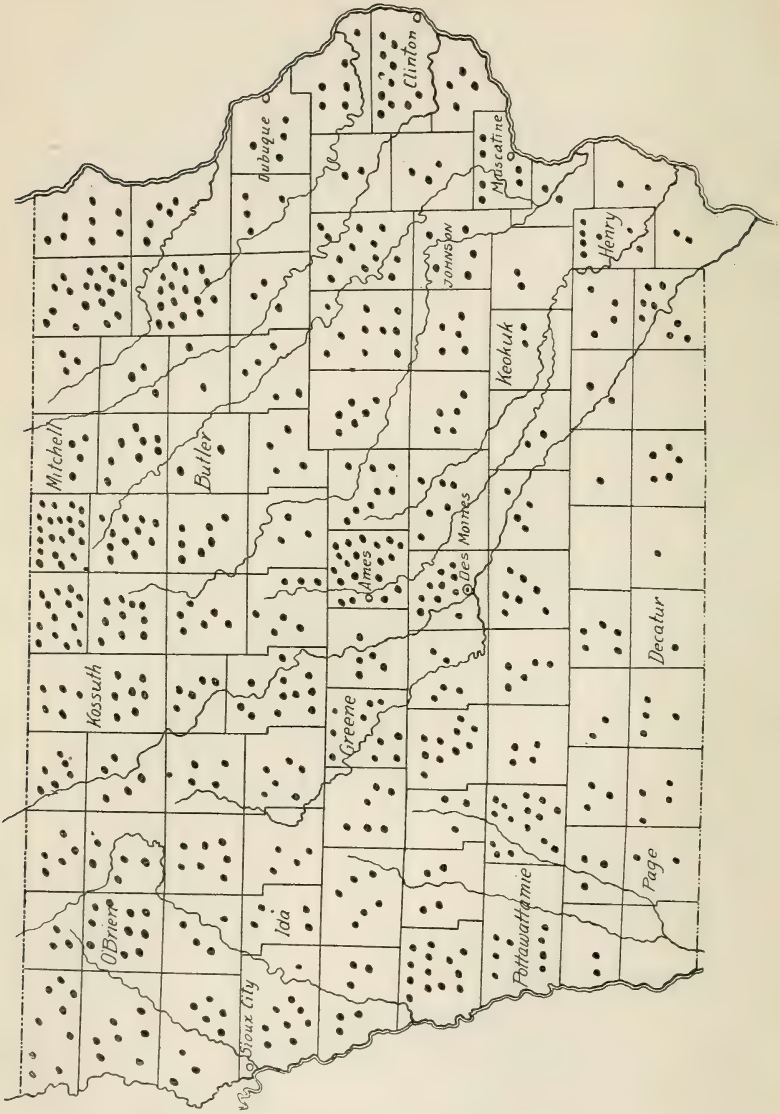
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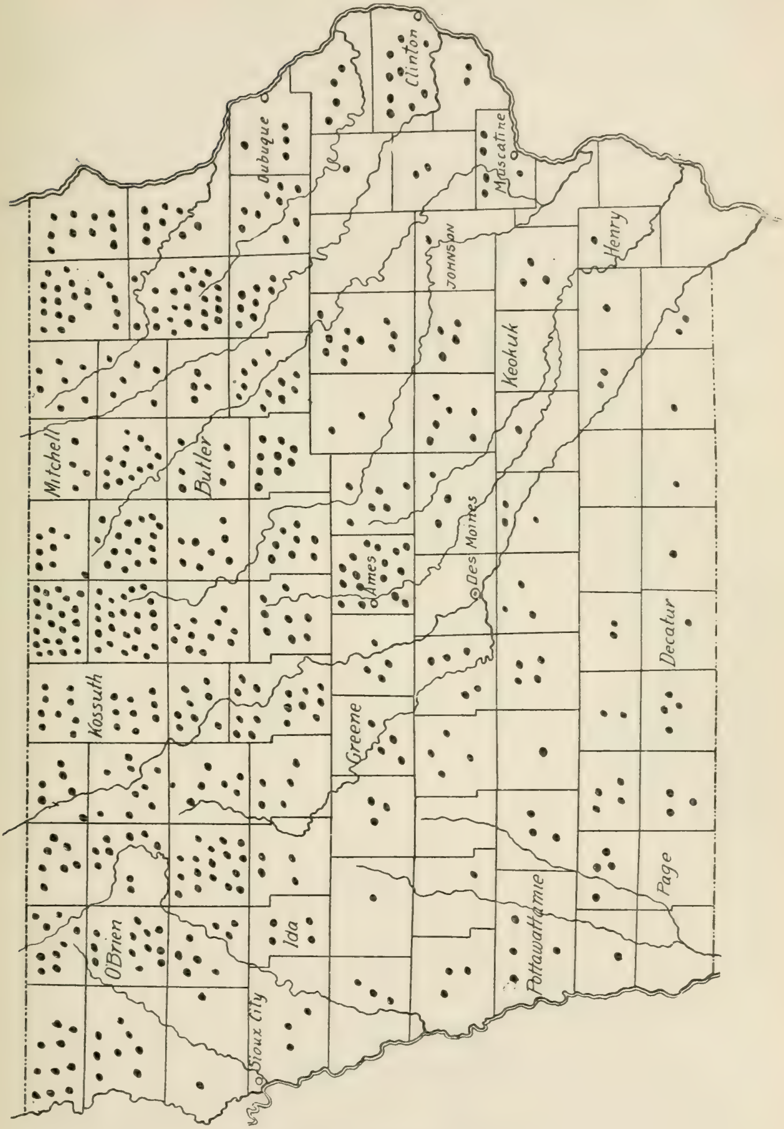
Squirrel-tail or Wild Barley.—Hordeum jubatum.
Dots represents report of occurrence.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Quack Grass.—Agropyron repens.
Dots represent report of occurrence.

Mr. Curtiss moved that the report of the committee be placed on file and the proposed bill presented to the Legislature, and that same be called to the attention of the Governor with view of having reference made to the same in his report. Seconded by Mr. Packard. Motion prevailed.

The matter of combination sale during the fair by the Iowa Sheep Breeders' Association was taken up. Mr. Johnston moved that the matter be referred to a committee of three consisting of the Secretary, the Superintendent of the Sheep Department and Mr. Curtiss. Seconded by Mr. Olson. Motion prevailed.

The Committee on Per Diem and Mileage made the following report, and on motion of the Chairman, the report was adopted:

Mr. President,—Your committee on Per Diem and Mileage beg leave to report as follows:

Name	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	6	$4.00	$24.00	140	$14.00	$38.00
W. C. Brown	6	4.00	24.00	102	10.20	34.20
R. S. Johnston	6	4.00	24.00	158	15.80	39.80
Elmer M. Reeves	6	4.00	24.00	123	12.30	36.30
R. T. St. John	3	4.00	12.00	195	19.50	31.50
E. J. Curtin	3	4.00	12.00	...	.....	12.00
S. B. Packard	6	4.00	24.00	58	5.80	29.80
T. C. Legoe	4	4.00	16.00	100	10.00	26.00
C. F. Curtiss	6	4.00	24.00	37	3.70	27.70
John Ledgerwood	6	4.00	24.00	64	6.40	30.40
M. McDonald	6	4.00	24.00	65	6.50	30.50
O. A. Olson	6	4.00	24.00	155	15.50	39.50
H. L. Pike	6	4.00	24.00	200	20.00	44.00
						419.70

Respectfully submitted,

R. S. Johnston,
O. A. Olson,
John Ledgerwood,
Committee.

Mr. Curtiss moved that all unfinished business be referred to the Executive Committee with power to act.

Motion prevailed.

President announced the following standing committees for the year:

STANDING COMMITTEES OF THE IOWA STATE BOARD OF AGRICULTURE, 1909.

Executive Committee—
C. E. Cameron, W. C. Brown, J. C. Simpson.

Auditing Committee—
C. W. Phillips, T. C. Legoe, R. S. Johnston.

Committee on Resolutions—
E. J. Curtin, M. McDonald, John Ledgerwood.

Committee on Rules—
C. E. Cameron, J. C. Simpson, C. F. Curtiss, R. S. Johnston, H. L. Pike.

Committee on Adulteration of Foods, Seeds and Other Products—
S. B. Packard, C. F. Curtiss, H. R. Wright.

Committee on Dairy Industry and Products, including Fraudulent Imitations—
H. R. Wright, O. A. Olson, W. C. Brown.

Committee on Contagious Diseases Among Domestic Animals—
C. F. Curtiss, P. O. Koto, H. L. Pike, E. M. Reeves.

Committee on Revision of Laws and New Laws—
S. B. Packard, C. F. Curtiss, H. R. Wright, C. E. Cameron, W. C. Brown, J. C. Simpson.

Legislative Committee—
C. E. Cameron, W. C. Brown, J. C. Simpson, S. B. Packard, C. W. Phillips.

On motion of Mr. Olson Board adjourned.

Attest: J. C. SIMPSON,
Secretary.

PART VI.

PROCEEDINGS

OF THE

Annual Meeting of the Swine Breeders' Association.

1908.

BY C. C. CARLIN, SECRETARY.

OFFICERS.

L. H. ROBERTS, PRESIDENT	*Paton*
H. F. HOFFMAN, VICE-PRESIDENT	*Washta*
HARVEY JOHNSON, VICE-PRESIDENT	*Logan*
C. C. CARLIN, SECRETARY AND TREASURER	*Des Moines*

The annual summer meeting of the Iowa Swine Breeders' Association for 1908 took place at Des Moines, Tuesday, June 16th. About one hundred members were present, although the crop conditions were such as to discourage attendance by those who do any farming. But breeders generally are loyal to their organization and show great interest in all means that may be taken for the advancement of their industry. This accounts for the fact that the swine breeders have succeeded in holding enthusiastic sessions every year, while breeders of other lines of live stock permitted interest in their organization to wane and gradually cease to exist. The Swine Breeders' Association is a democratic body, one in which every member takes pride, and in which each one exercises his right to enter freely into any and all discussions. It is realy a great big family consultation, and in its deliberations the subjects are exposed to view from all points and threshed out to the last handful of chaff. Nothing escapes. There are no privileged characters and no checks on any one. The session occupied the full afternoon and evening, and was opened by L. H. Roberts, of Paton, Iowa, with the following:

PRESIDENT'S ADDRESS.

I thought this morning as I lay in bed about four o'clock that if I had not been a regular attendant of the swine breeders' meetings in all probability I ought to go to this meeting. But I attended the first meeting, and to my recollection I have never missed one, and I always look forward with great pleasure to the meeting, not only because of the information which I get but also for the opportunity to meet the boys and have a visit with them. I am sure that if new farmers and breeders would only come out to the meeting with us they would get so enthused that they would keep on coming, for I notice that the old-time breeders who have been coming every year for twenty or twenty-five years don't get tired of it.

I want to congratulate this association, as well as the farmers of Iowa, who make hog raising a branch of their business, upon the satisfactory conditions of the past year; also a promise of a continuance of fairly good times in our line of work.

The pork market of the year has shown extremes of prices, first high and then low, but the range of prices has not been at all times profitable to the producer. On the other hand, there has been a great demand for breeding stock on the prospect of better markets or more and cheaper feed.

We, as breeders, must be careful in regard to cultivating a boom on any special line of breeding as history repeats itself, that is, when any article reaches a price above the actual value it always seeks a lower level than the actual worth.

So far as I have found this year there is not as large a crop of pigs as in former years and the loss of young pigs has been quite heavy. As breeders and pork raisers there is encouragement in the outlook for breeding animals as well as pork.

The importance of the Association to the State of Iowa is increasing year by year. Iowa produces practically twice the number of hogs of any other state in the Union, so Iowa is the greatest state in the Union. I believe it. Since our last meeting we have been privileged to show our hogs not only in the greatest state in the Union, but one of the best arranged buildings. Our premiums have been the most liberal and we appreciate the treatment extended to us by the officers.

The object of the Association has been to preserve the interests of this great industry and endeavor to make its condiiton better and forward its interests in every line. The Association has from the time of my earliest connection with it kept that steadily in view and adhered to those principles and will always do so. It is becoming recognized by the farmer of Iowa as a great help to him and he realizes more each year the benefits derived from the efforts of this Swine Breeders' Association.

We have on our program many papers that are intended to shed further light on our industry and to be an aid to beginners and a help to the older ones in the business.

The subject of "Iowa's Swine Exhibit at the International" was taken up by Prof. C. F. Curtiss of Ames, Iowa, in the following address:

I, like your president, am gratified to be one of the attendants of this meeting. I have made it a point to spend a little time at the swine breeders' meeting every year when I can do so, and I have always found it of interest and profit to attend these meetings and listen to the discussions pertaining to the work of the great industry in which you are engaged.

In considering the topic assigned to me I may say that as you probably know, there has been a prize offered at the International Live Stock Exposition during the past two years going to the state that takes the highest rank for the toal number of prizes won on all kinds of stock at the International. This has been called the Rosenbaum Special and consists of one thousand dollars divided into three prizes. The first year the prize was offered, Iowa ranked third and was exceeded by Illinois and Indiana. Last year Iowa ranked second and Illinois first again. Now, naturally an Iowa man does not like to see Iowa in second rank in any live stock competition and I began to inquire into the reasons for Iowa ranking second in a contest of this kind. Iowa is recognized as the first and foremost live stock state in the Union and it was generally expected Iowa would take first place in that kind of competition, so we made a careful record of all prizes won in the live stock classes at the International with a view to determining where the discrepancy was and where Iowa lost out and to our surprise we found that Iowa lost out where we least expected it, that is, in the hog show.There was enough there to have turned it to Iowa' favor each year I think, and it is quite surprising and should be alarming I think that a state having practically twice as many hogs and twice as great an interest in hog raising as any other state in the Union should drop down so badly in the competition of the Live Stock Exposition.

In the first place, of course, it is generally recognized that it is not a show of breeding stock that we have at the International. I know that there is a difference of opinion on the part of the hog breeders concerning the advisability of holding a breeding show and there has been a good deal of demand for a show of breeding stock but for various reasons the International has not seen fit to establish that kind of show and as long as that condition exists, it seems to me that if there is to be a show there the state ought to be represented by a larger number of exhibitors than it has been in the past. Some breeds have been very poorly represented and I think that the International awards on fat classes carry considerable weight and the breeds that are not represented will lose by it.

Some of the associations have each year contributed considerable in the way of specials to supplement the International prizes. (At this point

Professor Curtis gave the figures showing the winnings of Iowa and Illinois exhibitors and that aside from the winnings of the college stock Iowa had taken but twenty-five dollars in total premiums.) A course of this kind has brought out the relative rank of exhibitors of the different states and I do not believe that a state like Iowa with its live stock interests and particularly its hog interests can afford to take second place and fall so far behind a state like Illinois. This difference in the hog prizes alone, as stated at first, is enough to have changed the rank of the two states and instead of Iowa ranking second it would have ranked first easily if the Iowa hog breeders had been represented in the competition.

I presume there would be a difference of opinion about the advantage of showing barrows but whatever we think of it as breeders there is an advantage. There is an advantage not only in hog classes but cattle and all other classes. There are a great many people who attend these shows and form their own ideas of the animals as they are ready for the block. No one will gainsay the fact that the Angus cattle owe a large part of the prestige and favor that they have won in recent years to the record they have made at the International and no one will gainsay the fact that any breed that is represented at this show is given support and prestige. I believe that breeders of this state owe it to the reputation and rank of Iowa that we be represented there and hold up the rank of this state and take the position there that Iowa's interests as a hog producing state entitle her to take.

In the discussion which followed this address O. W. Browning of Newton, Iowa, said: ''I happened to be at the International for the first time last year and the hog show is certainly interesting and very instructive. I got acquainted with some of the men who have been making shows there for a number of years. There is an impression that stuff to be shown at the fat stock show has to be something pretty fine but there is lots of stuff down there that is not first class, so if any one is in condition to take stuff there, they don't need to have the very best to win. The car load class is the best class to show in. One trouble in showing car loads is on account of market prices. The price might decline from the time a man got his hogs together to the time of the show so that it would be a losing proposition unless there was some advertising scheme in view. The way to get a good show in car load classes is for the Record Association to put up a prize big enough to make a man pay out on the deal. I think that those in position to make an exhibit from Iowa would cetrainly be paid by doing so. The exhibits that are made at that show from Illinois especially are mostly made by individuals and not by any state institutions and the record Illinois has was made largely by individuals.''

Mr. W. Z. Swallow of Waukee, also spoke giving his idea of the reason more breeders did not show. ''I was there at that show and

I formed this kind of an idea. If the Poland China was away back in the class on prizes, the premium was not nearly as much as it was on Berkshire or Hampshire. The Berkshire and Hampshire Associations donate quite a bit of money to help these fellows. They said if Iowa can't do something, let them take a back seat, but I told them we have better hogs, anyway. The hog that won the grand championship was of mixed breed. He showed the Berkshire, red hog, and white hog, one pretty near as much as the other. He was a well built hog, but when it came to the slaughter test he was thrown out. The Berkshire prize was quite a bit larger than ours, and that is where they got ahead—because their association paid good prizes so they could afford to lose something. They can't take them to the state fair and get anything, so they had to take them there. The one trouble I think is that Iowa don't speak up and help us. If Iowa would pay the premium we would show the hogs. That is the way I look at it.''

Prof. Curtiss added the following information concerning the prizes: ''This prize is awarded on the International money awarded, that is, the Rosenbaum special prizes are based upon the amount of International money awarded and the specials are not taken into consideration. What Mr. Swallow says is largely true in a way, that is, that the Berkshire and Hampshire and some of those breeds whose respective associations have been putting up considerable money as specials have a higher allotment of prizes than those whose associations have not been putting up any money. However, that makes no difference in the standing of Iowa because the conditions are the same for an Iowa breeder as for an Illinois breeder. In regard to the point brought up by Mr. Browning, the prizes awarded to the Ilinois exhibitors were entirely won by private exhibitors. In our state if it had not been for what we sent in from Ames the state would have had a bare twenty-five dollars to its credit.''

Mr. Browning said: ''I want to say a word in regard to the judges that are selected from the stock yards. They don't have any prejudice and for that reason a person will get justice if he has a good hog. I noticed that in particular. They did not seem to favor any particular breed in passing on the merits of each one. I am not saying that they have no preferences but I say that when they come to pass on them they do not allow prejudice to stand in the way.''

There being no further discussion on this subject, J. B. Ashby of Audubon, Iowa, read his paper on "Scientific Swine Feeding," which was as follows:

The science of swine feeding is a broad subject. For lack of time, knowledge and through sympathy for the audience I will not discuss it at any length. The word science includes everything relating to the art or work of growing, harvesting and administering the many varieties and combinations of feeds to the hog.

Feeding hogs is a subject in which every farmer and breeder is or should be deeply interested. It is of universal importance; and I only wish I could go into it deeply and in a way that would interest you men here.

Starting with the new born pig, it requires practice and skill to feed the mother so that she will bring her litter out without scouring them. When this is done the first great danger is over. To do this she should be fed lightly and systematically. The same man should feed and care for her that fed her previous to farrowing. He should have his work well planned and good judgment should direct his movements. Many writers advocate the use of a strictly milk producing ration, but experience has shown that this is wrong. The flow of milk at this time is naturally greater than the pigs will take in the majority of cases. For this reason, a light feed of corn and oats is better for the sow and pigs both. In the course of a week the ration should be gradually changed to a slop of shorts and this increased until the ration consists of one-half of such feeds.

At the age of three weeks the pigs should commence eating and they should be encouraged by the use of a creep. The feed should consist of a slop of some good mill feeds. From the time the pigs commence eating, the expense of feeding gradually increases and with it the value of the pig increases if he is doing well and is properly fed.

It is not my purpose to propound the balanced ration fact or theory here today. However, the purpose or final end of the feeding operation is to produce a hog with strong bony framework and a development of muscles to such an extent that all the vital organs, such as the lungs, heart, digestive and reproductive organs, will be as perfect as possible when the hog is matured. To do this, the scientific, or, as I would rather call it, the systematic way of feeding must come into operation. Feeds high in protein and ash must be used or the development will not be so complete as it otherwise would be. Any of the following feeds may be used: wheat, wheat shorts, middlings, oil meal, oat shorts, packing house by-products, alafalfa and clover pastures. The ration should consist for the most part of one or a combination of these feeds. Every man has an idea of what combination he likes best.

The feeding of correctives, tonics and worm powders is at present advocated by a great many men and it is all right, but these are found on the farm, with the exception of the worm exterminator, in the form of corn cob, charcoal and grass. As a worm exterminator I have found five grains of santonin and three grains of calomel to each eighty pounds of hog to be the cheapest and most effective. However, considerable care is needed to feed such powder as only ten head should be treated at a time, and the powder thoroghly mixed through the slop.

No feeder, be he ever so careful and patient, can be successful in his operations if the conditions surrounding his hogs are not sanitary and clean. Slaked lime, dip and crude oil should be used freely, but not extravagantly, by every hog man. Lime and dip are good disinfectants, and will keep down disease, while the crude oil is the cheapest and most effective louse-killer I have ever tried.

Some one asked Mr. Ashby in what way he used crude oil to get the best results and he replied: "During the summer time I run about four inches on top of the water in the dipping tank and as fast as it is taken up I run on more. In the winter I just use the crude oil with a brush."

Another asked if Mr. Ashby used crude oil in connection with dip and he said: "I think it is a good plan to use both. As I only use the crude oil as a louse killer, I use the dip for disinfectant. I think it is cheaper to use the crude oil."

Mr. Swallow said: "Don't you think that where your hogs root around and you have lots of little holes where they go to wallow and where the water will stand after a rain, that if you scatter crude oil there it would be quite a help? It is the cheapest dipping tank you can get."

R. J. Harding of Macedonia, Iowa, asked if Mr. Ashby found it a good idea to slop pigs if the sows have not been solpped before farrowing time, but Mr. Ashby stated that he had never tried it. Mr. Harding continued: "I have adopted a different method of feeding than I used to. I feed the little pigs dry. I don't make any slop and I get much better results. I find that they thrive well on it and are not as apt to gorge themselves and the danger from scours is much less."

J. R. Pfander of Omaha, asked: "I would like to ask whether you feed the dry feed in self feeder form or a regular ration of it at feeding time as we do slop."

Mr. Harding said: "I have never adopted the self feeder but do just as I would in feeding slop, but I feed in a feeder that they can't get into. I take shorts and ground oats and I find that they will eat it up clean and will grow out. I feed the sow a little corn and they get some of that, but they have this other that the sow can not get to. I get much better growth with dry feed than with wet and do not have as many pigs with scours."

Mr. L. H. Paul of Anamosa, said: "I want to sanction what Mr. Harding has said. My personal opinion is that slopping pigs goes away back to the time when the swill barrel was put down in the ground and everything went into it. There is no animal living that will eat wet food when it can get dry. I always feed dry in preference to wet.''

Mr. G. W. Hockett of Manning, Iowa, also spoke on this subject: ''I agree in certain respects but I also want to say that some of these fellows that feed in the old-fashioned way get pretty good results. I have not had as much experience as some but I have tried all new methods and have gone back to the old-fashioned way and I believe that I have so far had about as much growth on my hogs as any. I have tried dry feed, but I never could make it work very well. The hog will eat slop if he is used to it and if it is balanced right he will not be harmed by it. The trouble with feeding slop with some people is making it all slop and no feed. The hog will not thrive on slop that is all water. If you make it thick they will be all right and will grow if you have the right kind of things in the feed. They ought to have dry feed that they can run to but if you mix the slop right you can get a good growth.''

Joe Steward here made the following statement: ''I just want to say that Mr. Ashby put up a first class paper.''

Mr. Browning said: ''This question has been gone over a good many times. There is a whole lot in it and we don't know anything about it. The longer I live the less I believe I know about hogs. As to feeding slop, I have experimented a good deal and if you go to feeding a little pig on concentrated feed you know what will happen. He takes it in liquid form and the older he gets the less it needs to be diluted. It seems to me that when he gets to the feeding period you want just about the same bulk of water as bulk of feed. Take ground oats and corn, put in a little oil cake and mix it up just so you have to thump the bucket to make it drop out. The pig don't like feed unless he has a little salt too. He will get outside of a whole lot of this kind of mixture in five or ten minutes and then he will be ready for just as much the next meal and the result will be that you will make a bigger gain in that way than any way in the world. If you want to slop him when he is little, you don't want it very thick. But the thing to do is to feed him on what you see he will do the best possible on. We have both sides of the question. So far as feeding slop goes, if you don't want to over feed a sow, just give her a little milk with some water in it. Then after a while leave out the water and put in a little shorts.''

Mr. W. M. Young of Ankeny, Iowa, asked about feeding dry corn and Mr. Pfander said: "If I was to feed slop right along I would feed dry corn. I think pigs do better on dry corn where you feed pretty heavy slop. That has been my experience at least."

Another gentleman asked about the advisability of grinding corn. Mr. Harding said: "I have tried it both ways and as far as I am concerned, I let the pig grind his own corn, and I think he gets just as good results."

Mr. Browning said in reference to this question: "I think the only object in grinding corn is in mixed feed. If you want to feed oats or wheat you want it ground and all mixed together to get the best results."

At the close of the discussion on this paper, W. J. Hartung of Maxwell, Iowa, read the following interesting paper on the subject "Economical Feeding for Pork."

This question of economical feeding for pork just now is a very vital question for the feeder and breeder, as the eventual end of every hog is at some time or other supposed to be the pork barrel. With the present high prices of feed and the comparatively low prices for hogs it will require very economical feeding to return a small profit, but it will not always be this way we hope. This question is very broad as to the best method.

The hog, as compared with other live stock, is generally the safest proposition and he generally pays his way with a good profit besides, as for mortgage lifters we owe much to the credit of the hog. While our prospects are upset by contagious diseases sometimes we simply try, try again.

What is the best breed of hogs? This is a question that has been agitating the public mind these many years. But the essential qualities of meat, pork and lard produced at the least cost of feed consumed there is no contention of breed difference that is influencing in this particular feature of the hog industry. The possibilities of the hog is a matter largely in the hands of the feeder, as the skill of all men is not alike, for one man will bring about greater results than another. My own experience teaches me that the success of the industry is proper quarters with plenty of range first before we attempt too much, with good sheds and numerous small lots and pastures so that the herd can be divided in smaller numbers. They should have access to a good fountain of water at all times, with good shade. This is quite important. In my own case I have my farm fenced hog tight and I think the money I spent to fence it was well spent. Then it can be cross fenced and allow them the greatest amount of range possible during the growing period.

Length and bone with good scale should be maintained so we can produce the greatest amount of weight from a given amount of feed from an economical point of view.

The ration should be well balanced. With corn at sixty-five cents and oats at fifty cents, good middlings at a dollar and forty cents per hundred and oil meal at a dollar and a half, as a good ration I would recommend six parts corn and one part oil meal. This ration with good clover pasture, will produce satisfactory gains and will be fairly economical. The more clover pasture, the better and cheaper the gain. I have also had very good results from feeding tankage to balance up with corn, as tankage is very rich in protein. With pigs running on good clover pasture I recommend a feed of nine parts corn and one part tankage. If they are not running on pasture I would feed seven parts corn to one part tankage.

There are too many young pigs whose usefulness is impaired by feeding too much corn. I find in my own experience that I am well paid for all the cost of the additional feeds, as there is less risk of disease and they are put on better gain, and therefore I can make a greater profit. I think a farmer ought to raise more of this protein feed himself. I believe it can be done. I will tell you how I am solving the question. I mix wheat and oats about half and half and sow them together and have raised from thirty to fifty bushels per acre. I do not like too much oats with it, as after it is ground the hull of the oats make too much bulk. I have gasoline power and do my own grinding and I take this wheat after it is ground with corn and a very small part of oil meal or tankage and it makes a ration for the young and the old alike and they eat it with a relish.

We should take care in feeding new corn as they are apt to eat too much and cause indigestion. Over-feeding will start a fever and nearly always cause trouble. I like the idea of husking part of my corn with the hogs. Plant pumpkins with the corn you expect to hog down and cut a few open every morning and watch how they eat them. They pick the corn up clean and gain lots of good exercise, and it don't cost you four cents a bushel and board for man and team to husk it.

To fit a bunch of hogs economically for the market a man must be on the lookout always, as the unexepected is always liable to happen. I never lost a pig by heat where they have had access to shade and water. At all times one must be on the lookout for worms, as worms cause a great amount of trouble with hogs. The best thing for worms, and about the only thing I use, is santonin, one ounce dissolved in boiling water and mixed in the slop for about sixty head of about 100 pounds each. Be sure to keep hog off feed from twelve to twenty-four hours before feeding worm medicine, as your money will be thrown away if fed on a full stomach. Give the hogs a mild physic after feeding worm medicine to expel the worms and be sure to have plenty of trough room where you feed it so all hogs get their portion. If this don't get the worms with a couple of doses it won't be necessary to buy any worm medicine sold by any agent at a long price, as it won't do any good. This has been my experience.

Another enemy that we should be on the lookout for is lice, as very few will thrive and feed out economically with their backs covered with lice. There are numerous good dips offered for this purpose, but my favorite dip is crude oil, and I think the only thing to use, as it kills the nits as well as Mr. Louse and is not at all injurious to the hog or his eyes and is far cheaper than the ready made dips. It does not require a great lot of oil to dip with. When you get ready to dip your hogs you fill your tank with three or four inches of where you always filled it with water, and then put in three or four inches of oil on top, the oil rises to the top always. The hog goes down through the oil and comes out oiled all over. No one can afford to feed even cheap corn to lice and lice live on the very substance of the hog. They do not eat the flesh but they drink the blood from which the flesh is formed. Much less can a farmer feed sixty-five per cent corn to an innumerable herd of vermin and dead beat boarders.

I think hogs should be fed at regular hours as near as possible, and it is a good idea to notice that all come out and that none are off their feed.

To obtain the greatest amount of weight from an economical point of view I think a good brick or cement feeding floor the proper thing to have, as it is simply impossible to feed economically in from one to six inches of mud half the year. I prefer a brick floor myself and they are in some respects superior to cement, and in my locality it only costs about one-half as much to build them and any one can do the work.

The time of marketing depends on certain conditions. The most profitable weight to market is around two hundred and fifty pounds as this weight hog is always in demand and will command the top price.

At the close of this paper Dr. Niles of Ames said: "I would like to endorse what he says in regard to the use of santonin for worms. It is certainly a satisfactory thing. There is one question in connection with feeding that was not brought out very definitely. That was the use of self-feeders and the feeding of tankage. I have not had much experience in feeding corn in self-feeders but I have with tankage and I have found that we have good results. The first day you fill your feeder the hog will use a good deal. After that he will only use as much as the system requires and you can use tankage quite nicely. We have had good experience and find that when a hog is out of condition we can tone it up with tankage."

Earl Addy of Parnell, Missouri, said: "I think we have struck something down in Missouri in the way of an economical feed that is pretty good and that is corn hearts. We first put eighty-five head on two hundred pounds of corn hearts and in thirty-eight days they had gained a hundred pounds at a cost of a dollar and twenty-five cents a hundred."

L. C. Rose of Prescott, Iowa, to whom was assigned the subject of "Young Pigs and Their Ailments," failed to respond. The discussion of the question, however, brought forth the following remarks:

ask a question that has been puzzling me for two years. Some of my strong pigs from the time they are a day or two old have little sore places just below the knees. They have good dry beds and I can find no reason for it but the skin seems to wear off and get sore. I would like to know the cause of it.''

Mr. Hockett thought it was caused by the sensitive skin coming in contact with polluted bedding, but Mr. Buck stated that he had noticed it in thirty-six hours after the pigs were farrowed and in good bedding.

Albert Sundell of Paton, Iowa, had this explanation to offer: ''I think it is caused a good deal at the time the pig is fighting for the right of his table. You always find that when the pig is born the first thing he does is to get to work and there is a good deal of fighting done during the first twenty-four hours until they get their fill and I think they do a good deal of rubbing that skin off in getting their rights the first twenty-four hours.''

Mr. Harding said: ''I have noticed this a good deal and I think you find it on almost all pigs and I don't think there is any question as to what causes it. I may be wrong, but I think it is the doubling of that joint back and as they scramble for their place stand on that joint and rub it on the bedding. The hair is all turned the wrong way and in a short time it becomes irritated and soon forms a sore.''

Joe Steward remarked that it might be a breed characteristic as he had never seen it on his pigs, and Mr. Buck replied that they were cross bred hogs, Poland Chinas and Durocs. In answer to Mr. Swallow's question if it was found in small litters, he said he had not noticed any difference, that all the pigs had had it for the last two years regardless of the size of the litter.

There being no further remarks on this subject, the subject of ''Fulfillment of Sale Ring Guarantees'' was taken up. The subject had been assigned to A. W. Holland of New London, Iowa, but Mr. Holland was unable to be present for the reason that his large barn and a good deal of his stock was destroyed by lightning lately with a considerable loss and for the additional reason that he was holding a public sale on this date.

In regard to this subject H. F. Hoffman of Washta, Iowa, said: ''I have never had much experience as I never had but one public sale. It looks to me as though a public sale guarantee should be just the same as a private sale. When a person sells a bred sow she should be in pig and should farrow on the date of service he

Frank Buck of Valley Junction, Iowa, said: ''I would like to names. If she fails to farrow the breeder should pay the express both ways, because he is to blame. There is a good reason of complaint both through the papers and orally and it is well grounded. It is doing a great injustice to the swine industry. I think this matter should be taken in hand and every breeder should in some way be made to feel that he is under obligations. We should know exactly when the sows are bred and should not let them go off the place unless we know. I will admit that we are imposed upon lots of times, but because others do wrong is no reason that we should.''

Mr. Swallow said: ''I think if you sell at private sale or public it should be on the same principle and if you sell a man an animal for a good price and she don't prove to be in pig you should pay express both ways. If you sell a good sow and she dies you should make the loss half. The same way with a male. I have made that a practice and when the animal don't prove to be good, all I ask is to put it on the market and give me half. If we all did that way I think we would have lots less trouble. But when a man uses good judgment and tries to take care of an animal and then it proves to be no good we should meet him half way.''

Some one asked how a breeder is to know when he ships a sow whether the person to whom it is shipped is careful in all respects in caring for the sow at farrowing time. He stated that he had shipped sows in that condition to people he did not know and they had reported the sows lost and he had no way of telling if they were honest in their statements. Mr. Swallow replied: ''We expect everybody to be honest and dealing with honest people and have to take it as it comes.''

One gentleman said: ''We have a right to expect when we buy an animal to get our pedigree and that is one of the things that is hurting the business and is one of the worst stumbling blocks. Men ask me about that more than anything else. Very few of the catalogues guarantee you a pedigree, but you have every right to expect to get one. Many times it runs up to four or five months or a year and I have stuff on the farm at the present time that should have their pedigree, but the men from whom I bought them haven't the pedigrees from the other parties. That is one thing that would be well to keep before the breeders that they catalogue in such shape that they can furnish pedigrees. If you give a man the pedigree he feels better over it even if he never looks at it.''

Mr. Hockett said: ''In regard to the sale guarantee, I think it is something that all of us should fulfil. If I sell a man a sow and guarantee to give him fifty per cent of the money back if she is not in pig, he ought not to expect all of it. If she is in pig and has good care she will farrow the litter. If she don't get that kind of care, I never feel that he ought to expect anything. The third pure bred sow I bought at private sale was in good condition and was in pig. I fed her and when she farrowed she had eight live pigs and two she failed to have because I fed her too heavily. It is not always lack of care but over-feeding so that a man may think he is doing the right thing. We should fulfil our guarantees in the catalogue, and if we know reason for fault in the sow it is all well and good to meet the man half way. If we don't know the circumstances, I never feel that it is our duty to go half way after we have fulfilled our guarantee."

Mr. Harding gave his views as follows: "I agree with some of this talk and some of it I do not. In regard to a sale guarantee, I think that we should fulfill our sale guarantees. That is all right. But every party that buys a sow should have interest enough in what he is buying to see what the guarantee is before he buys her and if he buys that sow under the guarantee in the catalogue he should not expect any more than that guarantee. I have always tried to be liberal and help a man out if he has trouble but yet he has no right to expect any more than is in that catalogue. I had one case where I made a statement that a sow was not in pig to the date given in the cataolgue but I guaranteed her to another date. Now the man bought her and then came back and said she did not come in on the date in the catalogue. I didn't expect her to and made the statement on sale day myself and had my clerk make the same announcement and yet he said he never heard of it. Who is to blame? I believe that the time is coming when we must put sows in the sale which carry their own guarantees. I might say this too, that I have before now sold sows that did carry their own guarantee and were shipped back claiming that they were not in pig. Then there is another question that comes up that is rather hard to handle. Some men expect this period to be on the absolute date. There is not one sow in a dozen that will farrow on the exact date. If a sow should go over six weeks I would naturally expect that there was a mistake and should be responsible. I do not like shipping a sow back to a man because if I pay the express both ways I am doing a losing business and if the other man pays the express he is doing a losing business. Why not settle on a good sound basis and let her stay where she is? Where you ship her back and forth the express company is making a big thing and you are getting nothing. If he buys her under that guarantee he certainly agrees to it. In regard to how you are going to deal with the proposition, the thing to do when a sow does not show that she is in pig is for the seller to hold her until she does. I am going to do that hereafter in my sales, unless the man wants her shipped.''

Mr. Roberts said: ''I believe this is one of the greatest subjects we have to handle today, the public sale, and your success and mine depends on how our public sales are handled. I believe we ought to fully understand what we expect to get from the breeder and from the buyer at our public sales. I believe with Mr. Harding that every sow that does not absolutely show her guarantee should be held on the farm until she does. I had quite a little experience this year, more this year than in twenty-five years before in the hog business. One man reported that the sow he bought was not in pig and I sent him another. She was crippled and lost her litter and I took it up with the express company and sent him another. He reported that she had several nice pigs and I was the right kind of a fellow. I wrote him the other day about her and he wrote back that the first sow had eight nice pigs. Another man wrote that his sow was not in pig and I wrote back that after the date if she did not farrow I would refund the money and the next thing I got a letter that she had six nice pigs. Then I had another sow that three weeks before time to farrow you could not have told that she was in pig and yet she had six nice pigs. We run against these things every once in a while. I have had several cases where sows were reported not safe that have proven to be so.''

Jas. Atkinson of Des Moines spoke as follows: ''I would like to speak a word about the matter of furnishing pedigrees. There is quite a misunderstanding on the part of the public as to what is expected when they buy pure bred hogs. Many people don't know the difference between the pedigree and a certificate of registration. I think every man that has a pure bred sow even if he is a beginner ought to have her recorded. You can understand that a newspaper man is the one that receives really the kick. A reader writes to an advertiser and buys a sow. He don't get the pedigree. He lets it go for a month or two months and then he begins to sweat and he writes to the man from whom he bought the sow, who is probably at the same time writing for it to another state. And then he begins to write to us. My idea is that when a man has a sow that is good enough to breed she ought to be recorded. Men do not always do that. He has in mind that he can sell her progeny for pure bred stock, but he might not be asked for pedigrees on the part of those who buy her progeny. If a sow is worth breeding, she is worth recording. Just as soon as the pigs are dropped you ought to get the blanks. My understanding is this, that a pedigree goes with young stuff, but half the people when they buy believe that a certificate of registration goes with it I would like to see the time come when the practice was fixed. It would be far less trouble. Then there is one other point, that is, the matter of guarantees. While I am not a lawyer, I know that what is announced on sale day will stand in law. If you have it announced on sale day that a sow is not bred on the date in the catalogue, it will stand. Mr. Swallow's plan of sending a certificate with each animal would be ideal, but the new men do not like to go to that expense. The older breeders know how to handle it, but when a man starts in business he buys a few bred gilts and then he starts to selling and the new men ought to know what to expect, whether a certificate of registration or a pedigree.''

Mr. Swallow explained his plan further by saying: ''If I sell you a bunch of gilts and you are not a stockholder in the association, I can give you a pedigree and get the stock recorded in your name for fifty cents where it would cost you a dollar. That is the way I sell two-thirds of my pigs. That is a good way to get the new fellows started. You get them built up and get them interested and they will go right along.''

Mr. Browning agreed with Mr. Swallow on this question. ''Like Mr. Swallow, I have had considerable experience in regard to the pedigrees and whenever I sell a sow at private sale I make the price so much and the sow to be recorded free of charge. Then I send the pedigree in when I make the sale and have it recorded and have the certificate sent to me so that I will know it is all right and then forward it to the buyer together with the pedigree of the male to which the sow was bred. All it will cost you will be fifty cents and it a very satisfactory way to do. That is the way I do at private sales and I believe it is the right way in public sales.''

J. P. Wallace of Des Moines said: ''The way in cattle sales is to furnish a certificate on sale day. It don't cost a great deal of money and you have it right there and the man feels better if you give it to him. It seems to me a man is just as much entitled to a pedigree as to a deed in buying land. If it is not recorded he ought to be told so. We get many complaints of this kind. It is a very easy thing to avoid by just a little business attention."

This closed the discussion on this subject and the folowing paper on "What the Packer Wants," by W. C. Agar, Des Moines, Iowa, was read by the Secretary, Mr. Agar not being able to be present:

The packer's desires are regulated by his wish to give the public their meat food products in such shape and condition as are the more attractive and readily salable, and he cannot be guided altogether by what would actually, from a dollars and cents point of view, be always the most profitable kind of hogs to buy. The public must have, and has first consideration. It would at first sight, therefore, rather appear that what the packer wants might not be altogether what the breeder would find it always the most profitable to raise if he be looking for quick returns, viz., a hardy, big-boned, tough animal capable of piling on lots of flesh as cheaply and quickly as possible, to which end I am sorry to think most breeders are now working. I would take this opportunity to remind those engaged in raising swine that the better they can please the public is the kind and quality of pork put on the market and displayed for sale, that just so much more will the consumption of this meat increase compared with other meats; beef, mutton, etc., and this should be, of course, of the utmost importance to those interested in swine raising. The prosperity of our country has put the working man, who is the great consumer of pork, in a very different position from that occupied some few years ago when financially he was not so well off and was unable to buy what suited his palate, as he is today. The public at large are able to buy what they desire and will not be satisfied with coarse fat pork, or indeed, rough meat of any kind. This is no doubt readily realized by the larger number of hog breeders who have for some time been turning their attention to developing an animal, the flesh of which would be so attractive and palatable as to very largely increase the consumption of pork, both cured and fresh. Those who have not yet given this matter the attention it deserves would do well to begin to do so without delay or further waste of time, for the future benefit, at least, of themselves and all others concerned.

Values of live stock, the same as other commodities are, as you know, regulated by supply and demand. If the demand for any given article can be increased, as it undoubtedly can for pork products, with the proper kind of attention, values will naturally increase and be higher than when the demand is at a minimum.

The type of hog most desired is that giving the greatest percentage of meat and lard, and the least quantity of offal and small meats (heads, feet, bone, etc.) As to weight, speaking in a general way, I would consider a hog around two hundred and fifty pounds in good condition, of course, the more attractive from a slaughterer's point of view. The young animal is preferred to an old one on account of the flesh being more tender and of better flavor. Firmness of both lean and fat are to be desired, and in this connection it seems to me a diet composed entirely of corn, or nearly so, is better than a mixed one, or in fact any kind of feed available in this section, on account of corn making firm fat and solid meat, which the public in this and foreign countries prefer, and furthermore this fat yields well when put into the lard kettle. Both public and packer discriminate always against oily meat; it is unpalatable and of little value for lard.

Color also seems to have some small influence on the minds of certain hog buyers. The red hog, for instance, being less in favor than the black, and, while I do not know that it has been proved that tuberculosis is found oftener in the red than in the black hog, there is at least a prejudice of this kind existing. I am incliued to think, on account of the red hog's roving disposition and that he seems to possess more energy than his black brother in rooting around and finding disease germs, if there are any, particularly tuberculosis, that the black hog on account of his more lethergic temperament would pass over. My impression is that the percentage of red hogs condemned for tuberculosis is greater than that of the black one. Speaking from my observation and on what little I have learned regarding the different breeds of swine, I think if I were in the swine raising business in the state of Iowa I should favor the Poland China and similar breeds as against the other and more dissimilar kinds.

I am given to understand the object of your association is to produce a smooth, well formed hog of symmetrical proportions, and this is worthy of the highest praise. I have already explained why it should pay to raise such stock. There is nothing in any way to be gained by the breeder in producing common stock with no merit but that of being a big-boned, coarse weight maker.

At the close of this paper Mr. Browning said: "Perhaps Mr. Agar heard there was a lot of red hog men here and it would be a good thing for him to stay away."

Mr. Harding: "We must all consider that Mr. Agar's opinion in regard to these hogs is just the opinion of one man and we might differ with him."

Mr. Roberts said: "I have had some little experience in judging hogs that the packer wants. I think there is a great mistake in the idea of the packers in regard to the hog. I believe that the ideal hog that we have is the type that the packer wants. About three years ago I went through the stock yards at Sioux City and out of all the hogs that they had in the yards I didn't find our type. The ideal type was not there. But when you go into their yards and pick out your type it comes pretty near to their type. The packer has not raised hogs and don't know anything about it until he cuts it through. What we want is what the packer wants. Our interests are identical. I believe the packer ought to get out and let the best breeders pick the hogs that are nearest to our ideal and show what we are after and that we are trying to produce what the packer wants.

Mr. Hockett said: "There is one thing that rather amused me in this paper. That is, in comparing the different breeds, he evidently thinks that the cause of this healthfulness is because they lie still and do not root around. My idea of it is that when they lie around they get the germs. I don't know which one of us is wrong."

Joe Stewart said: "I was thinking myself that that was one of the good points, that they were hustlers. We Poland China breeders do not claim that our hogs are the best for that reason. We claim that they lay on more meat for a bushel of corn."

Mr. Browning spoke still further on the subject. "I used to be a little prejudiced, but I have gotten past that and have respect for all breeds, but there is a difference in breeds. The Agricultural college at Ames tried for three years to see what the difference was and they arrived at the same conclusion as the packers. They found it out by experience. There were several breeds tried, the red hog, white, Berkshire, Yorkshire, Tamworths and Poland Chinas, I think, and they went so far as to send the meat to Europe and to Washington and they discovered first that the Berkshire hog is the best today for the packer; has the most lean and better quality of fat. The red hog is just the anti-type for the Berkshire. He will make the most lard and good sausage and will make a pretty fair quality of bacon. And another thing is that the red hog will utilize the corn better than the Berkshire. We don't want the corn to go to waste. But the packers have a way of making lean meat out of fat. The packer can do with his knife what it will take us years to do with breeding. A commission man from Chicago says they like the black hog best; another says they like the red hog. The Yorkshire hog is a bacon hog. Some Yorkshire hogs that had been fed at Ames were sent to England and when they passed on them they said it was too fat for bacon. At the same time they passed on the red hog (couldn't see the color) and said it was fairly good. In the market the red hog passed all right but I will say that there is a difference in hogs. The Berkshire hog is a nice hog and there is no doubt in my mind that a cross between the Berkshire and Poland China will make the best. But it don't make any difference what kind we raise so long as we get the most pork and get the price."

Mr. Stewart said: "It looks to me as though if the packer thought so much more of one breeder than another he would give him a little better price. For a breeder it is simply a question of raising a hog that you can get the most money out of. My preference is for black, but if I thought I could get more out of red I would raise that kind of hog.''

Mr. Hockett said: ''I have studied quite a little and you often see a lot of Duroc Jersey hogs topping the market, or perhaps in the next paper Poland Chinas top the market, or in a few days Berkshire have topped the market. The reason for this is because perhaps there was not as good a load of any other breed there on that day. Any breed of hogs if they are right, are right. I agree that the hog for any man to raise is the one that brings him the most money. If he likes red hogs he ought not to raise black ones, because he won't make a success. My opinion is that when you take what you call an ideal breeder's hog of either the Chester White, Berkshire, Poland China or Duroc Jersey breed and cut the head and feet off they would need a stamp on it in England to tell which it is.''

Mr. Harding gave his experience as follows: ''One time for a little education I shipped a carload of hogs to Clay, Robinson & Company of Chicago. They were red. They had a pretty good run that day, forty thousand on sale. I was lucky enough to top the market with my hogs. I said to Clay, Robinson that I thought they didn't like red hogs and they told me if we bring up the right kind of hogs it don't make any difference what color they are. But when you get a bunch of hogs that have a few red hairs or a few black ones, or white, and all legs they don't sell readily. I agree with Mr. Hockett that after they are dressed they couldn't tell the different breeds. They are all good. My preference is one, my neighbor likes another. That is all right and that is the kind for him to raise. If I cannot do better in something else, then I will go right ahead in that line.''

Mr. Roberts said: ''A man ought not always to judge the best breed by the market. I have shipped lots of red hogs and got good prices. I shipped a carload this fall and got low prices, but I do not believe it would pay me to change. This question of breeds is simply a fancy. They are all good. I have some black cattle that I like better than others; some Shire horses that I like better than others but they are no better than my neighbor's, who likes a different breed. The one we like best we take better care of.''

''Silage in Swine Rations'' was the next subject taken up, which was discussed by L. H. Paul of Anamosa, Iowa.

Two of your speakers this afternoon told you they were very glad to be here. I am kind of sorry. I have accepted this invitation to talk to a lot of men who know more than I do and I feel like the Irishman. One time when there had been a lot of rain he went down to the river and fell in. He floated down the stream a little way and caught hold of a branch, and when the waves came he went up and down with the branch. Finally he began to get tired and he said: "Begorry, if I hang on I'll drown and if I let loose I'll drown. I wish the darn thing would break."

In talking of silage we could only take it up as cheaper production. Farmers can sell farm products at market prices. It is a little hard to increase the market price. The thing to do is to increase the cost of producing. Every man who produces seven cent pork and sells it at Chicago for five cents would appreciate the work of any man who would tell them how to produce it at four cents and sell it at five. I think it can be done. Those who produce beef at six cents and sell it at five cents can't find the profit, but I know it can be produced at four cents if they find the method.

In treating this subject I will have to treat it in a little broader sense. It will be hard for me to confine myself to silage. All who grow hogs practically grow other stock that are considered of as much value as the hog crop. Silage for hogs has a greater value as a succulent crop. The food value of any plant or vegetable is in the moisture it contains. Take the corn stalk. The actual food value of that is held in solution and when we let that moisture pass off into the air that is the reason we don't get better results. You will shock up probably twelve tons of corn on an Iowa farm in September and when January comes you have three tons left and the nine tons that have evaorated is acually he food value and you have allowed it to evaporate and you have practically nothing left but the shell, the wood frame. If you will put it in the silo in September you have practically canned it, and you have the nutrition, the food value. You have the pith of the stalk and you have it canned and so you can get it to use for winter feed.

The main object in growing any unborn animal is to grow muscle. When a man says he bought a sow and fed it so that the pigs were so large they could not be farrowed, he ought to know that that could be avoided by feeding a vegetable ration. By feeding that you grow muscle. The time to grow bone and harden the bone is after the animal is born. Another thing is that it is a great deal cheaper. Corn stalk is certainly the cheap thing on our Iowa farms today for wintering brood sows or young cattle. If you put a corn crop into a silo, the stalks are worth more for feed than the ears. I was born in Iowa on a farm and I have put in all the years of my life growing corn for the ears. We have been wasting the most valuable part of our crop, the stalk. The great value of corn silage as a hog ration is its exreme cheapness. We have been in the dairy business but have been growing some hogs every year. We winter our sows practically on corn silage. You can winter a sow on corn silage if you will give her a little oil meal at about a cent and a quarter a day and there will be no danger of giving her too much corn. Corn has caused us a great deal of trouble from the excessive use of it.

It produces too hard and solid and in order to have success at farrowing time we must have something that will grow muscle and not bone.

I am afraid that before I get through you will lose the main point of my text like the boy that went to church. His father couldn't go and when he got home his father asked him what the text was. He said he didn't exactly remember but it was something like "Keep a stiff upper lip and you will get your blanket back." The old man couldn't understand and asked the minister about his text and the minister replied that it was "Be of good cheer and a Comforter will come." So, I say I am afraid that you will lose the text before I get through. When you talk to a lot of people that know more than you do you don't get along very well. When I talk to cattle feeders I talk silage as a sheep feed, and when I talk to sheep feeders I talk silage as a hog feed, but I am always true to silage. But your committee has got me down to silage as a hog ration. This is the first talk I have given on this subject and silage is not practical for a man that is feeding hogs alone, but when a man is growing beef he can produce it for two cents less by feeding silage than dry feed and the cattle will come out in the same strong, growthy condition as in the fall. Instead of starting your young stuff in on hay and having them a hundred pounds lighter in the spring you can have them a hundred pounds heavier in the spring than in the fall.

When you feed cattle with silage with something like oil meal you will have to feed your hogs out of the same silage because your hogs will not live after cattle. A steer eats corn to grow muscle. If you feed your steer out of a silo you will have practically all the corn a steer needs and another feed as valuable as blue grass and then with protein feed you can produce two cents a pound less. You can grow young stuff through the winter on this ration and it is much cheaper than any thing else.

This winter we wintered a carload of black cattle on silage and put them on grass this spring in the same growthy condition as they were in last fall and they have been growing every day on the pasture and are strong, thrifty fellows. My opinion is this, that the only reason stock does not starve to death on timothy hay is because the winter is not long enough. My cattle have done real well on timothy hay with some corn with it, but my wife has some chickens that will do real well on sawdust if there is some feed with it. Timothy hay will not keep an animal alive in this country for seven months in the winter. Keeping an animal alive is keeping some weight and keeping it in good condition. The tendency of all young animals is to get heavier every day. When it begins to get lighter, the plain way is that it is starving to death. It is easy to say that it is not doing well, but a man knows that it is starving to death when it gets thinner and you have only to continue for a few months and you will have his hide on the fence.

It is the same with hogs. In the winter in my part of the state we have nothing else to winter hogs on except corn. Some men provide clover hay. I have known hogs on my father's farm to go all through the winter with nothing but corn unless they got out and got other feed. Silage will keep them growthy and strong and there is all the corn in silage that a hog needs. If you want them in good condition it would be well to give them a little oil meal but a small portion of that is all that is needed. Silage keeps the digestive tract open and keeps the animal strong and healthy.

I would rather be talking silage to you for dairy cows or beef, for growing hogs with us is only a side issue. We have grown them though and wintered our hogs with good results. It is a very cheap ration. As I said in starting out that is what we are looking for and what we are after and I don't think it is worth while for me to take up your time. At any time any of you want to talk to me along my line, that is, silage for all animals on the farm, I would be glad to talk. We have never had an animal refuse it on the farm except the dog and the hired girl.

We have not had any hay on the farm for several years.. We pasture all the land every year except the corn field. In pasturing we always have plenty of grass, white clover and red, and blue grass—plenty of hogs and cattle and we shorten the winter two months by having lots of pasture. Whenever the grass is not covered with snow we have plenty of grass for every animal.

If I told you all the good things concerning a silo, it would be like the old man's bear story. He was telling about picking strawberries on the mountain side one August day when he heard the stones begin to rattle and looking up saw a big grizzly coming at him. He turned and ran with the big sixteen hundred pound bear in pursuit. Then he happened to think that the river was frozen over with a thin coate of ice that would hold him up but wouldn't support the bear. So he ran till he got to the river and as he had thought he went over in safety and the bear went through the ice. When he was through one of his listeners said, "I thought you said it was August when you were picking those strawberries," and the old man said, "I might have kept you here to tell all the story, but it was August when I was picking the strawberries and January when I got to the river." So that is the way it would be with me. It would be January before I got through telling you all of the good things about silage.

Corn in our part of the state has sold above forty-five cents every August for the last five years, and it has given us an idea that corn will always be high. Those of you that live west have bought your corn cheaper but if you will save your corn stalks properly they will be more valuable to you for feed than the ears. Corn stalks is worth more in the silo than the corn in the crib. When the farmers get down to studying their business along that line and get economical they will produce pork and beef cheaper. My talks are not very popular generally with farmers because I talk of what the farmer must do for himself. Better methods means better preparation of the soil, better care of growing crops, and better care of the crops at harvesting time. A little deeper study of our own business and by pursuing better methods is the only way that we can produce cheaper. We are looking for something better and if we expect these meetings to do us any good we must have some faith in what other men say.

Mr. Roberts asked about feeding this ration to a brood mare in place of hay and Mr. Paul said: ''I will give you some of the history of silage as we have gone through it. You know it is good for dairy cattle, but never thought of it as making beef. Did it ever occur to you that if silage would keep a Holstein steer fat it would keep an Aberdeen Angus or a Hereford steer fat? Corn in the roasting ear stage is not good for a silo. There is just as much difference between corn silage made of green corn and ripe corn as there is between roasting ears and matured corn. Green corn put in the silo turns to vinegar and you want it ripe to put in the silo. If you have the corn matured you will have sweet silage and just as safe to feed any animal on the farm as bluegrass. Corn in the matured stage put in the silo will stop in the first stage of fermentation and it is absolutely safe. If corn has been badly frozen, if you let it stand for several days and then put it in the silo it will make sweet silage, and you will get practically two-thirds value.''

Lee Hopper of Neola, Iowa, asked: ''In what manner do you feed hogs silage? Do you scatter on the ground or feed in racks? Our manner of feeding alfalfa is a regular hog rack.''

Mr. Paul: ''We generally feed in troughs the same as we feed milk or if the ground is frozen we just throw it on the ground.''

Some one asked about the cost and Mr. Paul said: ''A hog will eat about four pounds a day. Figuring corn at the average price it would be about a mill a day or a tenth of a cent to feed silage to a hog. There is all the corn in that amount of silage that a hog will need but you might add to it by feeding a little protein feed the same as you would on bluegrass. It is not rich enough in the bone and muscle part of the feed and should have something in that line.''

In answer to a question as to how many pounds of silage it would take to make a pound of pork, Mr. Paul said that he had no idea about that.

The question was asked if it should be wet as it was put in and Mr. Paul said: If it has been alowed to get quite dry we wet it. Just sprinkle it as it goes in. There are a great many details concerning a silo and nearly every man has read a good deal about corn silage but I have an idea that the point in nine out of every ten articles on the subject is to put a silo on your farm, and fill it with corn.''

In answer to several other questions from different gentlemen Mr. Paul said: ''I would rather, from my own experience, have the corn stalk in the silo for every purpose except feeding stock for market than to have the ears in the crib. The question is, can you afford to waste the most valuable part of the corn crop? Can you afford at the present prices of our land to waste by-products? As to the cost of putting corn in the silo per acre, we have grown corn that cut twenty tons to the acre and other that cut only eight. But to answer the question, it would cost from fifty to ninety cents per ton to put it in and an acre of our Iowa land will cut about twelve tons to the acre. About the cost of silos. They run from $115 to $1,500, owing to the kind of a silo you put up and how large. A good stave silo to hold ten acres of corn would cost you about $260. Some men put up their silo in an open lot where they can get all around it and others have them near the barn. The only thing to do is to put it where you think it will be most convenient for you. I have known men to buy two silos and put them up because they had two barns. It is rather bulky to handle if you have to carry it to the cows but it is not heavy. It would take about a bushel and a half to feed two cows, sheep eat about three pounds a day, horses fifteen, and hogs four.''

At this point Dr. J. H. McNeill of Ames, Iowa, took up the subject of ''Cholera Investigations and Tuberculosis,'' and made the following address.

I have been lost in the discussion of silage and almost got away from the subject assigned me. The time is late, the subject is broad, and I have enough material to talk for an hour or two, but I will simply drop a few facts and hints that will probably do you some good in the future.

I have talked at different times on the subject of tuberculosis and you have read in the farm journals and elsewhere a great deal about this subject. It is an old subject, but still a new one and one that you as swine breeders and stock raisers will have to deal with or meet in a short time.

There are several points that I want to make in the relation of tuberculosis to the swine industry. We usually take up the subject and discuss it from the viewpoint of a cattle man, the man that is breeding pure bred stock, the dairy man or the man who is simply dealing in common cross bred stock. There is a relation existing between the swine breeding industry and the cattle breeding industry. You may say, "Well I am not interested in that; I am simply breeding fine stock, and we have no cattle on the farm." But I think it is the practice of a good many of the stock breeders to feed some of the best animals a little milk and just along that line I will say that within the past year a pedigreed animal was purchased and taken to the college to be used in the herd. The animal became unthrifty, showed evidences of tuberculosis. He was killed and proved to be tubercular. He had tuberculosis in the worst form.

Now, that hog came from one of the best breeders of that particular breed in the middle west, but I understand that it has been the practice of that man to feed his hogs on milk which was evidently tubercular. From that you will see that you can go right back and follow along until you get to the point where the animal contracted the tuberculosis. That brings up another phase of the subject, the method of transmission, and that has been worked out within the last few years and become more generally considered. Nearly all tuberculosis is ingestive tuberculosis, or tuberculosis transmitted, where the infection takes place through the feed or the animals live together. That has become the accepted theory. Infection may take place through the milk pail, the separtor milk, cream or anything from the dairy.

What I want to get at in a short time is the manner of infection and what you must do to prevent it. There is no question but what tuberculosis is transmitted through milk. There is no question but what milk becomes infected either through a diseased condition of the cow or through the contamination of the milk from some of the discharges from the cow. Reynolds, of Minnesota, and Mohler and Cotton experimenting at the U. S. Experiment Station at Washington, have demonstrated this and we simply discard the fact that it is transmitted through the air. You can see there is a relation between tuberculosis in cattle and in hogs. To further demonstrate these points, after making the test of some cattle at the college farm we isolated the tubercular cows and placed in that feed lot some thirty head of hogs. Two died from other causes and there were left twenty-eight head. They ran after the cattle right out in the open. The cattle were fed on the ground and the twenty-eight head of hogs followed the cattle and slept with them I presume in the pen and at the end of one hundred days these hogs were taken to Chicago market and killed and twenty-two out of the twenty-eight, or about eighty per cent, were tubercular. Those animals simply ran after the cattle, picked up the offal, and that is the only way we have of figuring out how they became infected. We bought them from different farmers and killed enough to check the bunch. A little later, some four or five weeks ago, we shipped twenty five head to the Agar packing plant. They were around about a year old and had been running around the farm after the cattle. Out of the twenty-five head ten were tubercular, or forty per cent. Now, they probably had some milk, possibly from some of these cows before they were tested, or from a dairy or creamery and had become infected that way, but we do know that the twenty-two out of the twenty-eight became infected from rooting in the droppings from the cows. That may not occur with all tubercular cattle, but it occurs in cattle that have what we call open tuperculosis, where they will drop tupercular germs along with the droppings. The cow may expectorate this material or cough it up as far as the larynx. Then she swallows it and it is taken up and distributed to the different parts of the body. Any cow may be in a condition where she has open tuberculosis and still be fat enough for market so that we cannot tell by examining the cow whether she is tubercular or not. This problem will have to be dealt with. The packers have tried to get at it but they have failed. At the present time there are a great many of the cows that go into the Chicago market that are tubercular. Still they are shipped in defiance of the national law. There is a law saying that no animal suffering from a contagious disease shall be shipped out of a state and I understand that it is the intention of the Bureau of Animal Industry to enforce this.

There is a way to stop tuberculosis in hogs. That is to boil the milk, stop feeding milk, or clean up your cattle. The practical way seems to be where there are tubercular cattle to quarantine the place, test the cattle and make the man clean up his herd. At Cedar Rapids the federal government in some experiments there to determine the tubercular farms, tagged something like thirty-four hundred head of hogs and out of the whole number that were furnishing hogs to the abattoir six per cent were furnishing hogs that were tubercular and the other ninety-four were not. The packers of the present time have to stand the loss unless they state that they will not do that. There are certain packing houses in Iowa who will not receive hogs from certain dairy districts. They will not take them except subject to inspection. That means a great loss. I think according to the last statistics there were slaughtered about fifty-two million hogs and of this number one and a half per cent were tubercular. That does not mean that one and a half per cent were condemned, but that they were tubercular. They condemn them to the offal, use them for lard or pass them. It means that there is a great loss that can be prevented if we take proper measures in order to prevent the spread.. There is a state law requiring the heating of all milk that comes from a creamery to 185 degrees. Now, if that is enforced in all daries you would not have the tuberculosis that you do have in the different herds in the state. So much for the subject of tuberculosis.

As to the subject of hog cholera. Last year I took up the subject of hog cholera and dwelt on the patent foods to prevent hog cholera, or preventive measures used, disinfectants used and the use of certain hog cholera cures that are put on the market for nothing more than to keep up the expenses and help to declare dividends for certain corporations engaged in the manufacture of these products. There is no value at all in these so-called hog cholera cures. Some of them contain certain drugs that destroy intestinal parasites, but as far as preventing hog cholera is concerned they will not do it. They put the system in a little better shape to resist the disease, but will not prevent it if they once get infected. The United States Department of Agriculture has been investigating these swine diseases for a good many years and I think that in 1885 they discovered what was the cause of hog cholera. They worked along certain lines in trying to produce toxines and antitoxines in order to produce immunity, but they failed. Deswinets was the first man to work to this, as he discovered that it was due to some invisible organism. These investigations were worked out by Drs. Dorset and Niles and they have worked out the details of this great work and a great deal of credit is due to them for what we know of hog cholera at the present time. During the past year the Experiment Station at Ames conducted some experiments in conjunction with the federal government in confirming or checking their experiments. They carried their work out and then turned to the station veterinarian to check their work so as to be sure they had not made a mistake. They wanted to be checked by interested parties. We commenced along in October with some field experiments with the serum and blood from the government station. We bought some pigs from a leading stock farm and commenced this test. The first test was not very satisfactory. It didn't test out as we thought it ought and this is one point that I want to emphasize because in a little while some of the manufacturing concerns will take up this subject and put on the market a hog cholera cure of inferior material, unless the plan is followed out as outlined at the present time. The blood must be tested, the serum must be tested. In this first experiment the blood was tested, but it was not virulent and in this test the pigs died. Now, in the second test we took some of these same animals that we had vaccinated, some that were not exposed and took them to a field where a man was losing six or eight or ten a day. We took twenty hogs to that outbreak, and they were vaccinated at different times to see if we could determine upon a set time when hogs could be vaccinated and be immune to an outbreak. In this outbreak we used four animals for checks and sixteen were vaccinated either with serum or virulent blood. In this outbreak one of the checked pigs (one that has had no treatment at all is called a check) died in five days. Two more died a little later and finally the fourth. One serum pig died, but of the sixteen pigs that we had in that outbreak fifteen were never off their feed. We had another test where we put larger hogs in the government exposure pen. They had I think two or three animals in the pen at that time. We had four checks. Three of the checks became sick and died and the post-mortem showed hog cholera. Then three animals got sick but recovered. The other twelve that were vaccinated never became sick. Now, that check in a general way the test and proves conclusively enough to my mind that there is something in this vaccination if it is properly carried out. In the first test we went wrong. The blood was tested but was not virulent. It must be collected at a certain time and used in a certain way. The serum must be tested. There are some questions that will come up regarding the distribution of this material and the manufacture of it. We get many inquiries at the college asking for serum, to test it, to send some, or can a man use it himself. Druggists write for it. I do not believe that at the present time the serum is safe in the hands of the laymen. It is not safe in the hands of anybody but those who have had some instruction along that line and understand the use of those products. Just in a general way I will show you the use of this and you will see why it is important that some one who is acquainted with the manufacture of it or knows of the nature of the material should handle it. If you have an outbreak it is not advisable to use serum and virulent blood because you have your natural exposure then. You use the serum then and let your hogs go right with the hogs that are sick. If you do not have it, if you want to go to the fair and do not want to take it home with you, then you would use the serum and virulent blood and at the end of the time of exposure you would have your animals immune. It will not do to take the blood of this immune animal to vaccinate another. The animal must be hyper immune.

I believe that in the use of this serum or vaccine we have one of the things that will help us to get rid of hog cholera or control it. If you have an outbreak you could vaccinate or use serum on the hogs you have. The ones that are affected would probably die. Those not affected would probably go through the attack. Then your neighbor's hogs could be vaccinated, a quarantine established on the farm where the disease exists and stop the spread of it right there instead of letting it run from one county and state into another. You know that a great many times you buy hogs in different parts of the state and have them shipped and get hog cholera. I know of two or three instances where it has been carried in that way. A great many get it from the state fair, from shipping to other state fairs, and in different ways. But it could be prevented in the way I have outlined.

The next thing is the cost. One man who had bought a bunch of hogs that all died came around to know if we had any more serum. He wanted some to vaccinate some hogs to put after his cattle. If he could afford to do that even at a dollar and a half a dose, a man who can sell for fifty or sixty or a hundred dollars could well afford ten dollars to have them vaccinated. He not only loses the hogs but he loses the care and attention and years of breeding to breed them up to the present time. I think that in using serum or in using the serum and virulent blood that you have a means of preventing hog cholera that every one should use. If you have a bunch of hogs, say a hundred, and it costs ten dollars apiece to have them vaccinated. Say ninety-five per cent of the animals vaccinated go through the outbreak. Of course, you would lose maybe a hundred dollars or so. But where you did not have them vaccinated you would lose fifty or sixty or seventy per cent of your animals and some you might just as well lose because they would not take on fat. You have saved three or four hundred dollars right there and have saved the animals and the breeding of all the individuals that you have, so it is a proposition that seems to me you should not turn down. As to the methods of getting serum, that remains to be worked up.

You may say there is no cholera in the state. During the last week I have received twelve or fifteen letters from different sections of the state. A man wrote from Cambridge that he had it about a half mile from his place. I don't know how many herds were vaccinated last fall by Dr. Niles experimenting with this serum and the results have all been satisfactory, exceeding expectations in lots of cases where they had lost hogs in the herd, using the serum and bringing the rest through without any trouble. One man told me of a case where a sow had six pigs. They vaccinated the sow and one pig and reported that sow had one pig that lived and the other five died. I know that this is the history of these outbreaks. There are hog cholera cures on the market but they are no good. I have not tried them myself, but I have seen the results of the vaccination. But I know that the animals that were vaccinated with the vaccine as prepared by Dr. Niles went through the attack without any disease at all.

At the request of Mr. McNeill, Dr. Niles gave a short outline of their work and its results:

I might say that we have made so many experiments that we are perfectly satisfied that the method is a success. There is no question about it. We worked this method out first in 1905. We had very little time and in 1906 we perfected it somewhat and made many experiments. We still wanted to try it in the field before we published anything about it. In 1907 we manufactured some serum for the purpose of making tests. We supplied Mr. McNeill with some and also sent some to the Arkansas station, to Missouri and to Minnesota. Opportunity offered in the summer of making a pretty extended test in the field. We had a great deal of cholera in Story county and in Boone county and we found that there was so much of it there that we didn't have to go far from home and we vaccinated hogs on something like fifty different farms and started out to learn first as to whether we could prevent disease by vaccinating hogs before they were exposed if a neighbor's hogs were affected. We wished also to learn whether the farmer could be done any good after disease had gotten into his herd. Consequently we used our preparation in two kinds of herds, vaccinating a good many in which disease had appeared and a considerable number where disease had not appeared. In order to determine whether we did anything it was necessary to leave a good many check animals. Some of the herds we vaccinated very soon after the disease appeared. In others disease had considerable start and in others a portion of the animals before exposure. Our expectations were fully met in the herds where disease had not started. A considerable number of herds in which we vaccinated before the appearance of the disease showed by the checks that they had never become exposed, as the disease did not appear in the checks. In a number of instances, however, the checked animals did get sick. Of course we went around the edge of the outbreak, not in a healthy section. In some of those herds the disease appeared in the check animals and in most cases a great majority of the checks died and in some cases all. But in no instance did the vaccinated hogs sicken. We made extended experiments on our own farm before we went out. Where disease had already appeared we were agreeably surprised. I call to mind one herd in which we treated sixty-seven shoats. They were Duroc Jerseys weighing from twenty-five to seventy-five pounds. One shoat had been sick four or five days, another about one day and the disease was showing pretty plainly. We had to leave some animals untreated. We left twelve and treated sixty-seven. They all ran together and the two sick ones with them. Of the sixty-seven treated animals three died. The other sixty-four survived. Of the twelve animals not treated eight died and two others were decidedly sick. I am not able to say whether the remaining two showed any effect of the disease or not. I was some distance away and I was not able to visit it frequently. That is an illustration of what we did and what this method of vaccination will do in herds of this kind. We were very much surprised, as we did not know it would work out so well if there was disease in the herd. In herds where a larger number of sick animals were present the results were not so good, but we did not doctor a herd where we did not get good results. I do not know what could be done if the disease had actually appeared. So far we have concerned ourselves with preventing the disease rather than in curing it. There is no question but that the method, if properly carried out, would solve the question of preventing hog cholera. There would be no need of its spreading over a whole country if you could get hold of the serum to use on the herd. We find that the single vaccination is a little more easily carried out and I consider that the application of this vaccine ought to be in the hands of a competent man. Of course the amount of virulent blood used is exceedingly small and care should be taken in its use. Virulent blood is used hyperdemically. We always used one syringe for serum and one for virulent blood. It is injected in the side.

Mr. H. M. Yoder of Des Moines, Iowa, asked what effect it had upon an animal, whether or not it would retard the growth or fitting for shows. Dr. Niles replied: "There is no retarding influence whatever. They may be a little stiff the next day, but there is no indication except that the hog is in good health. We could not find that they suffered any inconvenience whatever, you would not know there was anything the matter; they seemed to thrive by associating with the sick hogs. It does not stunt them in any manner. It does not give the animal the disease. There is no disease induced by vaccination. When people are vaccinated a great many of them are feverish for a few days, but that is not the case with serum vaccination in hog cholera."

In reply to a question asked as to whether the government contemplates giving out this preparation Mr. Niles said: "I am not prepared to state what action the different states will take. I do not know just what will be done, but the idea is to interest the different experiment stations so that the merits of the method will be more widely spread and the people can learn about it."

Claude Huffman, Scranton, Iowa, asked Dr. McNeill concerning the symptoms of tuberculosis in hogs to which he replied: "A good many times there are no symptoms. A great many of the hogs that go to the market you can't tell that they are tubercular. However, if the glands on the neck swell and the hog gets short-winded it is a pretty good sign. A good many times if the lungs are filled up with a tubercular mass you can see their sides move. When they get it in a very bad form you will find enlargement in the region of the neck and sometimes it forms large abscesses, but aside from that you will not be able to tell. If you keep them long enough and the process of the disease is extensive enough they run down, get in bad shape, cough, will not eat and will not do well, but ordinarily you will not find any symptoms at all. It has been my experience that when you find a steer or cow wheezing and if she bloats a little you can make up your mind that she is tubercular.''

In regard to this question Jas. Atkinson said: ''I had two cows that started to bloat last fall just about the time they were turned on some clover pasture. I thought it was the clover and I took them off that pasture and I used a barrel of medicine and had three veterinarians out there, but I couldn't stop the bloating. Finally I tested them and they both reacted and I killed them to find out the trouble. They had continued to bloat and a singular thing about it was that those two cows were affected identically the same way. When we killed them we found on the windpipe a large tubercular lump. All other parts were absolutely clean. I will always be suspicious of cows in that condition.''

O. S. Gilbert of Eldora, Iowa, asked: ''Can you make a test in the dairy herd from the milk alone?''

Dr. McNeill: ''It is not practical to test the milk. You can find tuberculosis in the milk, but that is not practical. Test the cows and if you have tubercular cows you have tubercular milk. It is not practical because it is diluted in the milk. I will say that Mohler at Washington tested at one time fifteen samples of separator milk that he collected from different creameries in Iowa and he found five of these samples had tubercular germs. That, of course, comes from the cattle that are tubercular. It came from but one or two herds. A man may separate the milk himself. Then the separator keeps a lot of that at home and it doesn't affect anybody but himself, and as a usual thing he doesn't use the milk himself, but the children drink it. If we got it we would think a good deal more about the family side of it. We should all be very careful of that one thing. We had some cattle one time up at the college, some steers that were brought there to be fitted for the International. They were tested and reacted, sent to the Chicago market and were found to be tubercular. They were purchased from breeders of fine stock. One time we bought a steer and brought it there with a nurse cow. The nurse cow reacted and the steer reacted. They were both as fat as could be, so that the condition of the animal is no index as to the tubercular involvment of the animal.''

Mr. Yoder asked: ''Have you any advice as to preventing it in healthy cattle?''

Dr. McNeill said: ''You must have tubercular germs in order to have tuberculosis. If you do not have that you can keep cattle in any environment. All cattle should be kept in well lighted barns. Light destroys all germs and it will destroy tubercular germs. You should also have plenty of ventilation. There is a system of ventilation used by poultry men which is very good. They use canvass on doors and windows. I think it could be used in cattle and horse barns. At the college we take a piece of ordinary nine or ten cent cloth and tack it over the window. There will be no draft, but still plenty of ventilation. If you go into a barn like that there is not that stuffy condition and many dairy men are using that kind of ventilation. Every cow should have from six hundred to a thousand feet of air space. If you have a high ceiling you will have plenty of air space without a draft. The cows should not stand with their heads together. If a cow has open tuberculosis or coughs it out she will infect other cows that stand on either side. As far as ventilation is concerned it does modify the course of the disease in herds where there is tuberculosis, but it will not absolutely prevent other animals from getting it and the sane thing for you to do is to test your cattle. As to the manner of applying the test. It has been advocated that the farmer can apply this as well as the veterinarian. Probably he can. You could go into a court room and plead your own case or you might be your own doctor or do your own preaching, but we usually employ some one who is skilled along those lines because they can do it so much better than we can, so I think an experienced man should be employed to do this work. You cannot free your herd by one test. Some herds where you find one or two cows that have tuberculosis in a form where they do not discharge germs you can do that, but you never know when you have a case of tuberculosis and for that reason you should test your herd and remove all those animals and then retest them. They should be tested twice a year. It is better in the fall than in the spring. Every animal having tubercular germs does not have tuberculosis. That has been demonstrated, that an animal may take in tubercular germs and drop those germs without being affected. Iowa stock men will have to get hold of some plan for testing their herds, for I don't think you can use the Bang system. It is this, that you test your cattle, put your tubercular cattle by themselves, have your safe herd and quarantine herd. It takes to much time and the farmer can't have the attendants necessary. You must either test your cattle and condemn them or test them and keep them away. Take the calves out, test them, and put them by themselves for three months and at the end of the three months test them again and you can probably rid your herd in that way. It is not a good plan to test either immediately before or after calving. I would rather test them immediately before than three or four weeks after calving because there are many conditions that would produce a rise of temperature.

Lee Hopper said: ''Is it posible for the offspring to be healthy and all right? I read an article that said it was possible for a tubercular cow to raise healthy calves.''

Dr. McNeill: ''That is a fact. We do not consider congenital tuberculosis. If the animal had generalized tuberculosis or tuberculosis of the udder, you might have tuberculosis in the calf. But in carrying out the Bang system the calf is born, taken right out, placed with a nurse cow or fed on milk from the mother that has been heated and you can raise them that way. They do this in Denmark, which is a great dairy country and where they have a great deal of tuberculosis. I believe that the only successful way to deal with it is for the state to pay a part of the loss sustained in condemning the cattle. The New York Legislature has appropriated a great deal of money to help in the eradication in New York state of tuberculosis and to pay in part for animals that are condemned. Here is the proposition that confronts the stock men right now. They are testing their cattle on the sly. They are shipping them to Chicago and getting rid of them. When public opinion comes she will force this thing, the Legislature will get busy and the fellow that has been hanging back will find himself with a lot of tubercular cattle. The state authorities will come along and do something with them and he will not realize what he should. If you test them and get rid of them you will be doing the wise thing. We had glanders north of Ames a while ago. A man had been doing some work on a grade in one of the nearby towns and had lost one horse six weeks before the time he called me. Other horses had been sick. One of them the girl had been riding to town, driving around and hitching to the general hitching rack. They evidently knew that they had glanders because they had been working on the same grade with a man that had seventy head of mules that had glanders. Finally he sent for me and said he thought his horses had distemper. After asking a few questions I decided they had glanders. When I went out I found that three of them should have been killed several days before. On the nasal septum of one of them was a hole eaten through as big as a dollar and the horse could hardly breathe. I got his permission to kill it.

Out of twenty-one or twenty-two head he had seven head left. He had been holding on for six weeks and had exposed all the horses in the neighborhood to glanders. If he had reported it when he first noticed it in the horses to the state veterinarian, had them tested and cleaned them up it would not have amounted to anything and would have stopped the glanders right there.''

Mr. Roberts made the following suggestions: ''I want to drop one thought in regard to preventing the spread of hog cholera. I think it would be a good idea for this association to make a resolution that this thing be handled by the state, that it be handled by a veterinarian and have a man in each township who understands the nature of the disease to look after his six miles square. If it breaks out have him informed immediately and if he is certain it is hog cholera he should notify the state veterinarian in his distirct and the state veterinarian make an examination. Then if he found it to be cholera to proceed to treat with the serum all hogs within a distance of one mile in any direction from the infected herd so as to establish a quarantine and check the disease. I don't think it would be out of the way for this association to adopt such a resolution. We have to get after the thing so we can do something. The Iowa Swine Breeders will have to push the thing if we get anything. I would like to ask Dr. McNeill if we could not do something in that line.''

Dr. McNeill: ''That plan is all right, but we have to start back farther than that. We have to have a state veterinary board first. We have a state board in conjunction with the state board of health. It has been the experience of other states who tried to deal with it in that way that they have been unsuccessful. The state veterinarian must work in conjunction with the different live stock organizations of the state and in order to do that they must have a non-salaried board of supervision. It should be something like the laws of Minnesota or Pennsylvania. We do not have the kind of laws in this state regarding that and can't bring it about. Nor could we establish a board of veterinarians and do it, but it must be composed of good broad-minded stock men and agricultural men. Let them be non-salaried for a board of that kind and have one or two veterinarians on that board and then employ a state veterinarian and as many assistsant state veterinarians as necessary and take it out of politics as nearly as you can. Then you have a board that can ask the Legislature for money and get what you want. That is why Minnesota gets the money. That is the way they carry on this great work. Pennsylvania gets something like a hundred or a hundred and fifty thousand dollars and other states are doing the same thing. But we are doing nothing and have the greatest live stock interests of any of them. But I believe such a plan, the employment of a state veterinarian and the deputies in different parts of the state appointed because of their efficiency will carry this thing and that is what will have to be done in this state."

The closing paper for the evening was on the subject of "Legalizing Woven Wire Fence," and was read by P. B. Whittington of Earlham, Iowa.

This subject is one that has had considerable attention through the agricultural press of Iowa. I feel that it should have been placed in the hands of some brother breeder more capable of doing it justice, but am depending on the members present to help me with what I consider of vital interest to the swine growers of the state.

With land increasing in value each year in spite of panic, drouth or flood, it is certainly up to the swine growers of this state to get the land they own or till in shape that it will not only produce more feed but a get it in shape that the feed produced could be used to the best advantage with the least possible outlay. I believe this can best be done by giving us better fence laws than we have at the present time.

I think that it is hardly necessary to take your time to tell of the advantages of a hog tight fence. We have a law at the present time requiring the railways of Iowa to erect and maintain a hog and sheep tight fence between their right-of-ways and the adjoining land wherever the owner of the land has it enclosed in like manner. I believe the swine breeders of Iowa who do not happen to have railroads for neighbors would be satisfied with the same treatment and that it would be of inestimable value to the stock men and farmers of the state.

Some will say this would work a hardship on some. Let us grant that this is true. It is also a fact that all of our laws are made with a view to the greatest good to the greatest number. This being true, we would certainly be entitled to better fence laws than we have at the present time.

The claim has been made that it would be detrimental to the renter, based on the claim that the landlord would require a higher rent. Let us see as to this. Figuring on a basis of a hundred and sixty acres it would require, in case there was a road on two sides, four hundred and eighty rods of fence. Figure this at thirty-eight cents per rod, which is the present price of twenty-six inch woven wire fence of the best quality in my market, the cost of the fence would be a hundred and eighty-two dollars in round numbers, on which, let us say, the landlord would ask an increase of ten per cent. This would amount to eighteen dollars and twenty cents or eleven and three-eighths cents an acre and would require a saving in feed of thirty-two bushels and fifty-three pounds of corn at the present price of fifty-seven cents and I think it would be a very poor renter that could not beat that and have a handsome profit. I have talked to renters of farms ranging from forty to three hundred and twenty acres and in every instance they express themselves as in favor of the hog tight fences and would be glad to pay an increased rental of from eight to ten per cent on the value of the extra outlay of the landlord. We have a neighbor that rents a large farm who bought four hundred rods of twenty-six inch woven wire to complete the fence around an eighty of the farm he has rented. This is the first year of a five years' contract and he figures that the fence will save its cost every year in feed, and while none can tell what the price of feed will be for the next five years or even one year, I believe he is reasonable in his claim, as he has only to save two hundred and sixty-six bushels of corn.

It seems a waste of time for me to try to point out to swine breeders the benefits to be derived from a law that would require the owners of adjoining farms to erect and maintain hog tight fences wherever the adjoining land was so fenced, and the owner desired it. I think every one interested in growing swine, sheep or horses, as well as lots of cattle men of the state, will agree as to the benefits not only in the matter of feed saved, but in an almost unlimited number of ways. So I will take it for granted that practically all members of the Iowa Swine Breeders' Association are in favor of a law making the legal fence for Iowa, hog tight.

While it might be well for us to pass a resolution favoring such an act I believe it would do little good unless we followed it up with something a little more foreceful. The swine breeders have a powerful ally in the agricultural press of the state and if they would publish in our interest a form of petition for all interested to copy and circulate in their locality, it would be an easy matter for the swine breeders of Iowa to secure a petition that would carry it through. There are in Iowa nearly two thousand men that are recording Poland China hogs in the different associations and here are probably as many more recording hogs in other breeds, and if they will take an active interest in circulating such a petition we could certainly secure a good fence law. My idea is, in case this plan should meet with approval, to have a copy of such petition in the bank, printing office, or wherever in your judgment would be the best place in your individual case, and have your local paper call the attention of its readers to the fact that such petition could be found at such a place for the signatures of parties interested. This the papers in my locality have expressed a willingness to do free of charge. Then bunch these petitions in the hands of a committee of stockmen of the state for presentation to our law makers, or have the petitions, if the association should think best, sent to the representatives of the counties in which they were secured, with a personal request to favor same.

As the hour was quite late there was no discussion of the subject presented by Mr. Whittington, but after the meeting it received a very cordial reception and universal approval of every one who mentioned it.

Owing to the fact that farm work during the month of June makes it a hardship for almost any breeder to lose the time necessary to attend this meeting, it was proposed to change the date to some time in December, preferably during the same week as the meeting of the State Board of Agriculture and other kindred organizations. On motion of Mr. Swallow such change was ordered. This action will in effect discontinue the June meetings which have become one of the greatest events with the swine breeding fraternity of Iowa and while it may be a greater convenience to meet in the winter, it will take some time for the old war horses of the business to become accustomed to it.

The regular annual business meeting and election of officers takes place on the state fair grounds on Wednesday evening of fair week.

EXPERT JUDGE ASSOCIATION.

An excellent session of the National Association of Expert Swine Judges took place at Des Moines, Wednesday, July 17th. Quite a large proportion of those in attendance at the meeting of the Iowa Swine Breeders, on the day previous, remained and took active part in the proceedings. Vice-President Hoffman presided in the absence of President E. Z. Russell. The election of officers for the coming year resulted as follows:

President—H. F. Hoffman, Washta, Iowa.
First Vice-President—A. P. Alsin, Boone, Iowa.
Second Vice-President—J. W. Ogle, Ames, Iowa.
Secretary and Treasurer—Wm. D. McTavish, Coggon, Iowa.
Committee on Arrangements—C. C. Carlin, L. H. Roberts and Wm. D. McTavish.

There was quite an extended talk on the work of the organization and its important place in the swine industry. A concensus of opinion was that there existed an urgent need that the score card be more generally known, and that its influence in securing a more desirable type of hog in the hands of both breeder and farmer should receive a wider appreciation. It is a fact beyond dispute that complete knowledge of the score card furnishes the best and most practical men and brought to its present high standard of perfection by long years of patient observation and careful revision. Men of all breeds have collaborated in its formation and improvement, and no interest in any way affected was permitted to remain unconsulted. With these facts in mind a committee was appointed whose duty it shall be to devise the best means of bringing about a better and more complete knowledge of the score card and its objects among breeders and farmers. This committee is composed of Messrs. Sam McKelvie, Wm. D. McTavish, J. R. Pfander and C. C. Carlin.

The next meeting will be on the day following the winter meeting of the Iowa Swine Breeders' Association.

The scoring of hogs and examination of candidates for certificates as expert judges was conducted by a committee consisting of W. Z. Swallow, R. J. Harding and J. R. Pfander. The specimens used for scoring were a Berkshire boar furnished by J. W. Ogle of Ames, a Chester White boar, from J. T. Whitted of Monroe, and a Duroc Jersey sow sent by C. C. Carlin of Des Moines.

On the Berkshire ten candidates scored, and certificates were granted to Wm. D. McTavish.

In the Chester White class eleven scored. Certificates were given to E. H. Cantine, Cherokee, Iowa; Earl Addy, Parnell, Missouri; O. S. Gilbert, Eldora, Iowa.

In the Duroc Jersey class there were twelve. Those who succeeded in securing certificates were E. H. Cantine, Wm. D. McTavish, Geo. T. White of Dallas Center, Iowa, and R. F. Dewey, West Union, Iowa.

PART VII.

PROCEEDINGS

OF THE

Thirty-First Annual Convention of the Iowa State Dairy Association

HELD AT WATERLOO, IOWA,

December 18, 19, 20, 1908.

OFFICERS.

W. B. BARNEY, President	*Hampton*
L. S. EDWARDS, Vice President	*Parkersburg*
W. B. JOHNSON, Secretary	*Des Moines*
F. L. ODELL, Treasurer	*Des Moines*

The Iowa State Dairy Association met in its thirty-second annual convention at Waterloo, and was called to order Wednesday evening, November 18, 1908, at 8 o'clock, President W. B. Barney in the chair.

The Chairman: We will now listen to the address of welcome by Mayor R. A. Doty.

ADDRESS OF WELCOME.

R. R. DOTY, MAYOR, WATERLOO, IOWA.

M. President, Ladies, Gentlemen and Visiting Delegates: I think it has been the custom at meetings of this character that a representative of the city in which the convention is held should bid welcome to its guests. In this instance this duty has fallen to my lot, and I can't help but think of the Irish tug hand on board a ship. He was asked one time to dispose of a corpse that had appeared on board during the journey. It appears that the captain met Pat and he says: "We have a corpse on board, Pat, and I want you, after everything is quiet tonight, to take him out and bury him according to our custom." Pat said he would. Next morning the captain asked Pat if he carried out his orders. "I did, soir," said Pat. The captain, on close observation, noticed that Pat showed signs of having gone through some sort of a struggle, and he asked him what it meant. "That Jew down there put up a pretty good fight," replied Pat, "but I threw him overboard just the same." "What stateroom was he in?" said the captain. "Number 22," said Pat. "Oh, I told you 32," gasped the captain. "Sure you did, and that fellow kept telling me all the time he wasn't dead, but I didn't believe him."

As a representative of this city it certainly is an honor and a pleasure to me to welcome you to our midst, and in behalf of the city of Waterloo I extend most sincerely to you a hearty welcome. We, as citizens, love to entertain our visitors. We are proud of the achievements, what little they have been, that we have accomplished in our little city, which we think has made us one of the best cities in this broad state of Iowa. We welcome you because you come here in the interests of one of the greatest industries in the world—an industry that has helped materially to bring Iowa up among the foremost states in this grand union of ours—the dairy industry. The products of the dairy industry, so far as food stuffs are concerned, surpass all other items of our diet. From a financial point, the dairy industry, I believe, ranks among the largest. If I am informed correctly, the value of the annual output of dairy products in the United States aggregate over $500,000,000. This is certainly a vast sum and must represent a vast industry.

The dairy business is a big element in the agricultural world. It differs materially from the other phases of agriculture inasmuch as instead of taking from the fertility of the soil it adds to it, and I believe that the dairy industry also is the only soil industry whereby the farmer can gain a monthly income throughout the year. It never ceases, while crop raising is seasonable. The farmer has to wait for harvest before he can get his money. Therefore, I say the industry you gentlemen represent tonight is one of the greatest we have in this country. I believe that your association represents more particularly the manufacturing end of dairying. This phase of dairying has undergone a wonderful change and the end is not yet. I think if anyone will take a look at the displays in Machinery Hall he will find many new and practical inventions. Most of you represent the manufacturing end, and if you will allow me to suggest that I believe the time has come when we should put forth considerable effort on our parts to perfect the unfinished product. It certainly is one of the most important things facing the American people today from a health standpoint. I think too little attention is paid to the producer of dairy products. While it may not be in the province of this organization, I believe that if it should get behind and help educate the producer in producing a better quality of milk you would do one of the greatest services to manikind you could possibly do.

Mr. Chairman, you have a long program, and there are speakers and musicians to come that will instruct and entertain you, and I therefore will not take up more of your time. I thank you.

THE CHAIR?AN: The next will be the response by F. W. Stephenson, of Lamont.

RESPONSE TO ADDRESS OF WELCOME.

F. W. STEPHENSON, LAMONT, IOWA.

Mr. Stephenson: We have assembled in Waterloo for the second time I believe, in the history of our association—one of the greatest cities in the state; a city that is known far and wide for its manufacturing interests, known far and wide for its schools, for its places of business, for its schools, where the child is taken from the kindergarten, mounts the ladder of knowledge until it reaches that place—the day of its graduation, when it takes its place in the world an honorable man or woman.

Waterloo has magnificent churches. Its spires pointing heavenward remind us of nothing else than a higher and a holier life.

Mr. Doty, in behalf of the members of this association, I thank you for the hearty welcome that you have given us to your city. I am proud to have you know that I am a member of this association—one of the best associations in the world, representing the dairy industry of the state of Iowa. If I understand it correctly, the United States census for 1905 states that the output of the dairy industry of the state of Iowa amounted to nearly $16,500,000. This is a lot of money. Why shouldn't we, each and every one, be proud that we are a member of this association.

Just a word to the buttermakers. The time has come in my judgment in the life of a buttermaker that when he simply weighs the milk and manufacturers it into butter his work is not done. The time is at hand when the buttermaker must be an educator; when he must be able to go out and meet his patrons and instruct them in the way they should care for their milk and cream. You, nor I, nor any other man can't make good butter without good milk, and if the farmer will not take care of his milk and is careless, it is the duty of you and I to go out and visit that man personally. Point out to him where he is weak and try to bring him up to that high standard of quality which we are working for.

It seems to me that we, as buttermakers, have been a little careless in the past. We have neglected, or at least I believe quite a number of us have neglected their duties in the creamery. You know it is impossible for a patron of any creamery to rise higher in cleanliness than the buttermaker. I have no right to preach cleanlines to a patron when I allow my creamery to go dirty. So the thing for us to do is to set the standard. Keep everything in good order then you have a right to call your patron down if he doesn't furnish the milk or cream as it should be. I hope there are not many here who do not keep a daily record of their business. We ought not wait a month to have the secretary tell us that our overrun is down. You have a had a leak for 30 days and didn't know it. Keep account of your milk every day and then you will be able in the morning to tell within a very few pounds how much butter you should have. Then if you have a leak you can detect it and locate it and stop it, therefore bringing your overrun up to where it should be. It means dollars and cents to the creamery.

There comes to every man, I believe, some time in life opportunities. These conventions are held for that purpose. We do not attend these conventions for the simple reason of having a lay off or a good time; we come here to get facts that we can take back home with us, put into action and help our creamery. I presume to some (I hope not) temptations may come before this convention ends. If you yield, my friends, it lowers you in the estimation of the public. I believe that there is in the bosom of every man power that will enable him to overcome these temptations, and by so doing raise him to a higher plane. So, Mr. Doty, my prayer tonight is that there won't a single member of this association do or say one thing that will cause you or the citizens of Waterloo to regret for one moment the effort that has been put forth to get this convention here. I thank you.

PRESIDENT: We will now listen to the report of our Secretary, Mr. W. B. Johnson.

SECRETARY'S REPORT.

W. B. JOHNSON, DES MOINES, IOWA.

I am not going to take up very much of your time, but I want to say to you that I am glad to make the following statement. Records show that the 31st annual convention held in Des Moines was one of the best ever held by this association, and prospects are now that your secretary next year will be able to say to you the same thing.

The 31st annual meeting of the Iowa State Dairy Association was held in Des Moines, November 20th, 21st and 22d, 1907. The meeting was called to order by President W. B. Barney at 7:30 p. m., November 20, 1907. All officers present, also a large attendance of delegates. The program was carried out in full. Election of officers, appointing of committees and such other business as came before the association was taken up and despatched in due form. Convention closed November 22, 1907, and was pronounced by all as one of the best and the largest meetings ever held by the association.

A meeting of the Executive Committee was called to order by President Barney on July 24, 1908, and all members were present. Propositions tendered the association by different cities for the holding of their annual convention were considered, and after due consideration the motion was carried to hold the convention in Waterloo, November 18, 19 and 20, 1908. It was moved that E. T. Sadler be secured to report this meeting. Carried. Meeting adjourned until August 19th.

The August 19th meeting was called to order by President Barney with all members present. Unfinished business was taken up and disposed of in proper form, and arrangements made for holding the convention at Waterloo. All business completed and the meeting adjourned.

SECRETARY'S FINANCIAL REPORT.

From January 1, 1907 to July 1, 1908.

Jan. 1, '07, balance in treasury	$1,350.04	
July 1, '07, interest on deposits	26.50	
Jan. 1, '08, interest on deposits	22.39	
Advertising to date	374.80	
Collected on booths	3.25	
Contributions to date	685.00	
Memberships	222.00	
Butter sales	1,088.77	
Jul. 1, '08 Expenses as per items		$2,316.64
Balance on hand in treasury		1,456.21
	$3,772.85	$3,772.85

SECRETARY'S CASH ACCOUNT.

Nov. 22, 1907, Received from Treasurer Brown	$ 55.00	
28, 1907, Received from Treasurer Brown	1,050.00	
22, 1907, Paid C. A. Nurell, prize money		$ 20.00
22, 1907, Paid A. D. Frandsen, prize money		20.00
22, 1907, Paid F. W. Stephenson, prize money		10.00
22, 1907, Paid L. S. Edwards, prize money		5.00
29, 1907, Paid overweight on butter exhibited:		
N. C. Nelson		3.00
W. J. Clark		3.50
H. P. Holgerson		3.50
F. C. Jennings		3.00
H. S. Allen		2.00
J. Starr,		2.00
R. Howard		1.75
P. Nyman		1.50
Nov. 29, 1907 Paid pro rata in milk class		452.79
Paid pro rate in cream class		557.46
July 1, 1908, Balance on hand		19.50
	$1,105.00	$1,105.00

W. B. Johnson, Secretary.

REPORT OF F. M. BROWN, TREASURER.

DISBURSEMENTS.

W. B. Barney, expense, Des Moines	$ 12.41
L. S. Edwards, expense, Des Moines	13.71
F. M. Brown, expense, Des Moines	13.76
Treasurer's bond	10.00
F. M. Brown, expense, Waterloo	2.85
W. B. Barney, expense, Waterloo	8.13
Expense Premium Fund	55.00

Expense, Telephone, Des Moines	2.00	
Mary M. Carpenter, expense	23.65	
Making out reports	3.00	
Jurgenson & Anderson	50.00	
Gherity & Co., Badges	90.00	
Expense, F. L. O'dell	20.00	
Express on badges and medals	1.55	
T. L. Julian, expense	16.15	
W. B. Johnson, expense	51.13	
W. B. Barney, expense	7.96	
F. M. Brown, expense	13.50	
L. J. Carpenter, expense	3.00	
Jules Lombard, expense	9.30	
Express on butter	76.38	
Fred L. Kimball Estate	217.35	
Life Membership medal for Jules Lombard	14.00	
Pro Rata Fund	1,050.00	
H. G. Van Pelt, expense	4.25	
W. D. Hoard, expense	108.19	
Expense, Machinery Hall, Des Moines	56.08	
Expense, G. L. McKay	17.00	
Expense, cartage on butter	2.50	
Expense, Mary M. Carpenter	75.00	
Expense, N. H. Trimble	6.00	
Expense and salary, W. B. Johnson	163.92	
Expense, Shriner Temple, Des Moines	5.00	
Expense, John Bower	3.50	
Fitch Cornell Co., overpaid on butter	80.00	
Expense, G. L. McKay	8.25	
Expense, Fred L. Kimball estate	5.50	
Expense, W. E. Smith	4.12	
Expense, W. B. Barney	4.70	
Expense, Register and Leader, Des Moines	7.80	
Total		$2,316.64

RECEIPTS.

Cash on hand July 19th	$1,350.04
M. Augenbleck & Bro.	5.00
Elov Ericsson	10.00
Fitch Cornell Co.	10.00
Gude Bros.	20.00
Northey Mfg. Co	5.00
John Shell & Bros	10.00
Geo. M. Rittenhouse	5.00
Francis D. Moulton Co.	10.00
International Salt Co	25.00
H. D. Reynolds	5.00
Chas. Hillman	5.00
Merrill & Eldridge	10.00

Enyard & Godley	10.00
National Creamery Supply Co	10.00
A. H. Barber Creamery Supply Co	20.00
Interest to July 1, 1907	26.60
Membership badges	222.00
City of Des Moines	300.00
John Sollie	5.00
Chamberlain hotel	10.00
Jacob Jacobson	5.00
Worcester Salt Co	15.00
W. D. Collyer Co	10.00
A. L. Covill	10.00
G. W. Kennedy	5.00
E. P. Mack	10.00
Fitch Cornell Co., sale of butter	1,088.77
Gallagher Bros.	5.00
Empire Cream Separator Co	10.00
P. F. Brown	10.00
Chris. Hansen Laboratory	5.00
J. G. Cherry Co.	65.00
Creamery Package Mfg. Co	70.00
Jensen Mfg. Co.	25.00
Sharpless Cream Separator Co	20.00
Philip Morgan	5.00
Savery Hotel	10.00
Burroughs Adding Machine Co	5.00
Spurbeck Lambert Co	20.00
Diamond Crystal Salt Co.	15.00
Eastern State Refrigerator Co	9.80
Elliott Hotel	10.00
M. H. Fairchilds & Bros	5.00
Elov Ericsson	5.00
Wells & Richardson Co	20.00
De Laval Separator Co	40.00
Fred Bischoff	5.00
J. W. Stewart	5.00
Kirkwood Hotel	10.00
McKay Bros.	5.00
Smith Premier Typewriter Co	5.00
Vermont Farm Machine Co	10.00
National Creamery Supply Co	10.00
J. B. Ford Co	20.00
International Salt Co., for booth	3.25
Iowa Dairy Separator Co.	35.00
S. B. Friday Co.	10.00
International Harvester Co.	10.00
Wellington Hotel	10.00
H. C. Hargreaves	15.00
Des Moines Mfg. Co	5.00

Chicago Co-operative Coal Co	10.00	
Waterloo Cream Separator Co	5.00	
Interest to January 1, 1908	22.39	
Total receipts	$3,772.85	$3,772.85
Disbursements	2,316.64	
Balance on hand July 1, 1908	$1,456.21	

The reports of Secretary Johnson and Treasurer Brown were accepted as read.

CHAIRMAN: The next, I believe, is the appointment of the several committees. I will appoint the following:

Legislative Committee—E. R. Shoemaker, Waterloo; W. W. Marsh, Waterloo; W. B. Quarton, Algona; B. W. Newberry, Strawberry Point; F. A. Leighton, Des Moines.

Resolution Committee—H. R. Wright, Des Moines; T. J. Julian, Algona; F. W. Stephenson, Lamont.

CHAIRMAN: We have found it necessary to revise our by-laws, and for that purpose I will appoint a committee. On that committee I propose to appoint as chairman P. H. Kieffer, of New York. Mr. Kieffer is familiar with the workings of the association and I thought it necessary to put men on there that knew something of what we would have to do to revise them. The present by-laws were adopted about seventeen years ago and nothing has been changed since. Other members will be L. S. Edwards, of Parkersburg; H. J. Nietert, of Walker.

Auditing Committee—F. W. Mack, Waterloo; M. J. Johnson, Shell Rock; D. D. Parker, Des Moines.

VICE-PRESIDENT: The next on our program is our President's annual address, W. B. Barney, whom I think needs no introduction to this association. Mr. Barney:

PRESIDENT'S ANNUAL ADDRESS.

W. B. BARNEY, HAMPTON, IOWA.

Since our last meeting held in Des Moines a year ago, we have gone through with a panic and a presidential election. On account of the stability of our business, neither has materially affected the Iowa dairymen and I am able to again contratulate you at the close of the thirty-second year of our existence on the prosperous condition of the association.

So much has been said in the past with reference to an appropriation by our state legislature that I do not feel there can be anything new brought out at this time. A short review of the plans and work of your legislative committee may be appropriate. This association is under lasting obligations to E. R. Shoemaker, chairman, as well as his associates on the committee, for the unceasing efforts to get the legislature interested in your behalf.

Our plan, as formulated, contemplates asking the legisalture for at least $10,000. We hope with this to put two or three first-class men in the state as instructors and inspectors to work especially among the dairy men and creamery patrons organizing cow testing associations that will enable the farmers to weed out their poor and unprofitable cows. These men will also give practical instruction in feeding and breeding dairy cattle, the growing of feed and the use of the silo.

It has been the plan of this association to hold but one convention a year. Those of us who have had this matter in hand know how hard it has been without a regular fund to fall back on to keep up an existence. It is not expected to do away with this meeting, but to make it much larger and better than it has ever been. It is hoped that this yearly meeting may be held in some of the larger cities in the state that have an auditorium with a good basement where a fine show of dairy cattle may be made. In addition to this we expect with the assistance of the appropriation, to bring the gospel of good dairying to the very doors of thousands of farmers that could not attend the state meeting by holding seven or eight small conventions or what may be termed short courses in dairying in different parts of the state. These meetings will really be schools of instruction along scientific lines such as are now being used in Germany and other foreign countries. The principal expenses of these meetings will be for hall rent, paying speakers and securing material for demonstrative work.

We have heard much of late about teaching of agriculture in our public schools. Within the last year we have had several inquiries from principals of these schools saying that they were expected to teach agriculture and that they felt that dairying was one of the most important branches they would like to know where they could get literature and information that would be helpful to them in this work. If the Iowa State Dairy Association can get this appropriation, we are confident that we can return more of real value to the state in an educational way for the price they are paying, than can be had through any other source.

This association is made up of men, many of whose lives have been spent in dairying and for its betterment. They understand, thoroughly, the needs of our state and are in a position to give most excellent returns for the small appropriation for which we are asking. We gave last year the amounts appropriated by our sister states for dairy improvement. We will only call your attention to the advancement they are making. It is largely due to this financial aid. Why should our state neglect so important an industry longer, when no other of our sister states has better natural advantages?

The population of Iowa is being rapidly depleted by the immigration of our young men to the west, the south and to Canada. The proper encouragement of the dairy industry will stop this. When it is known that dairying can be made profitable on Iowa land at $100 to $150 per acre, and when our young men find by what method this can be accomplished, our farms will be reduced in size, our boys given profitable occupation at home and the profits from agriculture will be greatly increased throughout the state, through methods of intensified farming. Why should we wait until our soil is worn out, as is the case in many of the eastern states, before taking steps to stop this great waste of fertility and the consequent shrinkage in value of land that is sure to come.

Every member of this association should go to his senator and representative and reason this matter out with him. The argument is all on your side.

In Holland, Denmark and the islands of Jersey and Guernsey, lands are worth from $700 to $2,000 per acre. Yet these people sell their products in the London market in competition with ours. If it were not for their advanced methods this could not be done. If this matter is properly presented to our legislators there is no question as to our success. They are not so blind to the interests of their constituents as to longer overlook an opportunity to invest a few thousand dollars that will bring results ten-fold in value to our state.

In behalf of our people who, by long hours of hard confining work, are able to make an honest living, we appeal to you as men, asking for what we are entitled to by every right as loyal citizens and tax payers.

The dairy sentiment in our state has increased ten-fold in the last five years. There are evidences of this on every hand. The number of silos built in the last year is a fair indication of the trend toward better conditions. It is estimated that forty per cent of our corn crop, which is the most valuable of any crop we have, or about $40,000,000 per year, has been wasted by husking and leaving the fodder in the field. We have contended for years that the silo is by far the best method of getting the full value out of this crop. After having used one for fifteen years we are sometimes amazed when we note how slow some of our progressive men are in taking advantage of the silo.

The introduction of dairy sires, and, in many cases, the putting in of a few pure bred dairy cows will be sure to help bring up our average per cow, which was only recently 140 pounds per year.

It should be remembered that, without improving our dairy herds, little progress can be hoped for. On the cow rests our whole dairy structure. If each buttermaker in the state will use his influence with his patrons to have them test their cows, sell off the poor ones and then, by the introduction of pure bred dairy sires, grade up their herd, he will soon increase his output 33 1-3 per cent.

The completion of the yearly record of Colantha 4th's Johanna of 1,200 pounds of commercial butter and the records of several other high-class dairy cows, finished this year, are only further proof of what may be accomplished by breeding.

The demand for high-classed grade dairy cows of the different dairy breeds continues unabated. There are not half enough of them to supply the needs of the country. The opportunity for making a profit in breeding this class of stock is most excellent; they are ready sale at prices ranging from $50 to $100. Most any dairyman, by an investment in a pure bred dairy sire, of $75 to $150, is ready to make a start and if he has twenty or more cows the increased value of his first crop of heifer calves will pay for their sire.

The Iowa Dairy Cattle Improvement Association is doing a good work and are entitled to your hearty support. The National Dairy Show and National Buttermakers' Association are both working for the good of one common interest. To the National Dairy Union we are indebted for our oleo law. It should be remembered that it is only through organized effort that legislation for our own good can be brought about and that these associations are all helpful in times of need.

Space will not permit the discussion of the matter of tuberculosis among our cattle to the extent I would like to. Our next legislature will undoubtedly be asked to give us a law compensating the owner to the amount of at least 60 per cent of his loss where cattle are condemned by the state.

This plan in other states has been tried with the effect that in many instances the disease has been checked and the results are most satisfactory. No law should be enacted without giving this matter more than a usual amount of consideration.

It is our opinion that if every animal that reacts as a result of the tuberculin test were slaughtered and every child were dead that has drunk the milk from these animals, there would be a great scarcity of beef, milk and children. Please do not understand that I mean to condemn the test. There is no question but that it is the best means of determining the presence of disease in our herds that we have.

The Bang system, as applied to valuable bred animals has many things that appeal to those that have given this plan due consideration.

Whatever law is enacted should first be with reference to the absolute protection of public health and with due consideration for the owners of our cattle. New York, after having considered this matter for two or three years, has recently passed a law that we believe would fit well into the conditions in this state.

For having made me your vice-president three years and your president for two years, I feel that I am under great obligations to the association; I am sure I have been honored almost beyond measure. It has been a great pleasure to me to go over the state and meet many of you in your places of business and your homes. Your counsel has been helpful. I want to thank you all for the earnest work you have done that has made possible the building up of an association second to none other of its kind in this country. In delivering the reins to my successor, I wish to thank you for the loyal support you and the executive committee have accorded me in my efforts to do my duty, as your servant according to the light that was in me.

You have done much for the betterment of our interests; yet there should be no relaxation of effort on our part if we shall make Iowa what it should be—the greatest dairy state in the Union. I thank you.

CHAIRMAN: We will next listen to an address by Hon. H. R. Wright, State Dairy and Food Commissioner of Iowa.

ADDRESS.

H. R. WRIGHT, DAIRY AND FOOD COMMISSIONER, DES MOINES, IOWA.

Mr. Chairman and Gentlemen of the Iowa State Dairy Association:

I don't know whether or not you will be interested or entertained by what I have to say. It may be that some of you will disagree with the ideas I have.

For several years there has been an irrepressible conflict in this state between two methods of creamery management. We have each year met in convention and ponderously wondered just what the outcome would be. A few of us have discussed the manners and methods of the faction to which we did not belong with considerable heat and unnecessary and unavailing anger. The large number of us have been mildly interested in the present, a trifle curious about the future and not too well posted about existing conditions or prevailing tendencies. We have complained about various details, the hand separator and some of its attendant evils, but most of us have thought that the problems confronting us have for us individually an academic curiosity. The object of what I have to say is first, if possible, to set forth without arousing unnecessary ill feeling the facts of the present conditions in dairying in Iowa, and to call attention to the prevailing tendencies upon which we are obliged to estimate the future. Second, to suggest for the present and the future evils one kind of remedy that has not yet been tried and not largely discussed. Third, to suggest an addition to the methods of co-operative creamery management that I believe will strengthen them and make for permanence in such organizations.

We shall do well to come to a discussion of the matter with open minds, with our prejudices left at home, and with a desire to know and to weight those facts that cannot be disputed. Opinions are sometimes valuable but facts are mighty stubborn things and do not give way to mere opinions.

In 1900 this state had 994 creameries and stations; now it has 552. Since 1900 about five hundred creameries and stations have been closed and about fifty opened. Creameries have been closed in every part of the state in about the same number for each county or other area. No part of the state has escaped this change, not even those portions where the co-operative has been and is in the ascendency. One-third of the butter of this state is now made in less than thirty-five creameries, making from 300,000 pounds of butter annually to 6,000,000 pounds annually. No railway station in Iowa is more than seventy-five miles from at elast two of the thirty-five central plants. In another seven years there will be a still furtner decrease in the number of our creameries, and nine-tenths of the butter will be made in three score creameries and the total number will be less than one hundred. That's an opinion, but I believe it is an absolutely correct one unless present conditions and tendencies are by some means vitally changed.

No one ought to feel sorry about this present and possible change if the dairy business of the state as distinguished from the creamery business has been and will be benefitted by it. We can scarcely be so selfish as to put the interests of a few hundred buttermakers ahead of those of 100,000 producers and another 100,000 farmers that ought to and will be producers in this state if profits in dairying can be increased. There has been an enormous increase in dairying in the southern and western part of the state. There ought to have been an extraordinary increase in dairying in every part of the state and so the whole production should be very greatly increased. It has been so in other states that have been developing in any degree new territory as we have here. But it has not been so in Iowa. There has been little or no aggregate increase in dairying, there has been no steady increase in amount of butter produced; there has been a distinct loss in various localities in the so-called dairy districts of the state instead of increase in production. Our production has fluctuated with varying success but has not shown the growth that other states have shown, except in the present year, and that gain is probably only because of temporary causes. It is mighty difficult to be satisfied with what little progress and increase has been made in Iowa during the last seven or eight years.

In discussing the future it is not necessary to consider wholly just what have been the practices of the larger creameries of this state. It is immaterial to this discussion whether they have introduced unfair and unjust competition. The future is just the same whether they have already done so, or whether they simply have the power to do so. It is alleged that the practice of paying different prices for butter-fat in different localities prevails in this state. Disregard discussion of the truth or falsity of this accusation every man here knows that they have the power to do so and to put out of business almost any creamery in the state by such practice. Where is the man that dares go to Gladbrook or some other point now wholly dependent upon the shipping of cream to a market and invest $2,500 in a creamery? Not one of you is anxious to do so, and some of you would be mighty glad to unload the plants you now have. The character of competition that may be met in such enterprises has absolutely made it impossible to establish creameries in more than half the area of the state, and has deprived the would-be cream producers of the competition that would have resulted if creameries had been established. Competition is said to be the life of trade, but the competition must be on a fair basis. A fair field and no favors results in the highest good to the greatest number.

In the interest of compelling such fair competition in the matter of purchasing of cream I propose that the next legislature be asked by this association to make it unlawful for any person or corporation buying milk or cream or butter-fat in this state to make any discriminations in prices under like conditions of time and products. I believe that such a law will make for permanency and development in the erecting and maintaining of creameries for the manufacture of butter, because its enforcement would insure to every man who desires to make that sort of an investment that he would have fair and open competition; that he would strive with his competitiors on the basis of his ability to operate the business and his competency as a business manager and not upon the basis of his financial ability to pay more than the raw material is worth for a longer time than his opponent. It would make possible the continued existence of both and competition each with the other in a legitimate manner for the business of the community. And it would insure for the producer the highest continuous price for his product that is consistent with good business management and a reasonable profit for the operator of the business. Without such a statute it is hardly conceivable that there will ever be a different condition in those parts of the state now wholly given over to the centralizers, for the reason that it would be a very rash individual who would invest his money in a plant that was subject to be wiped out at the caprice of an individual who is a competitor with every reason for wishing the whole field for himself. I say again that whether such discriminations have been practiced is not material to this discussion. The fact that they are possible makes it unwise for one to invest his money in creameries at the present time, and hence makes impossible the competition that is necessary for the life of any business. I propose this plan as a possible means of checking a growing tendency toward complete centralization of the creamery business into the hands of a few men or of a few corporations, in the hope that it will be endorsed by this association and hence its presentation to the legislature next winter may be with some hope of success. Such legislation is not new. This particular measure is already upon the statute books of one of our newer states, and the state of Iowa has a statute of similar kind relating to discriminations in the selling price of an article of universal use. I am assured by competent lawyers that a statute along this line can be drawn that will stand the test of the courts and in the interest of fair play and for the sake of the dairy industry as a whole I ask the approval of this organization for such a measure.

This is an age of co-operation, and many lines of agricultural industry in this country and especially in other countries have been saved to the farmer only by co-operative societies of one kind or another. "When bad men confederate good men must combine" seems to have been the thought of a good many co-operators. I believe that co-operative creameries may take a leaf from the book of some other society with great good to the creameries. The great weakness in our present co-operative creameries is inability to hold patronage against competition that is perfectly well known to be unfair. Let our better creameries be re-organized upon the lines of the co-operative grain elevators in this state. Let a sufficient number of members be brought together to insure a volume of business to make the business successful. Let each man agree to send his milk or cream regularly or to pay to the organization a cent a pound for every pound of butter-fat he sells elsewhere. Then if some other concern wishes to get a little of the local creamery's patronage away in order to break up the organization they will be indirectly paying the expenses of the organization sought to be destroyed. An organization along these lines will be easily affected just as soon as it is generally realized that unless greater strength is added to the co-operative idea among creameries they are in great danger of extinction. Without attempt to discuss details I suggest this plan for the consideration of creamery managers and buttermakers.

I think few are ignorant of the fact that personally I believe that co-operative creamery management makes for best results to the producer and to the consumer. In order that dairying in Iowa may not come to mean what it now means in Kansas and Nebraska and the west I hope that the weaknesses of co-operative plans may be strengthened and that fair competition may be compelled by statute. No one system of creamery operation is likely to be equally adapted to all conditions and situations and the demand for prohibition of discriminations is in the legitimate interest of every creamery of the state, no matter what its methods of organization and operation may be, and is in the interest of both the producer and the consumer.

I know that such reforms will come only by great effort on the part of somebody, but we have the single choice of making the effort or of giving up to present tendencies in creamery operation. It takes brains to co-operate in the creamery and dairy business. It takes brains to meet present difficult conditions and to overcome them. It is going to take brains and a lot of hard work to save the creamery and dairy business from complete centralization and monopoly. It is the duty and a responsibility that falls largely upon the members of this association, and I know that its membership has both the brains and the energy to make the future in Iowa what we know it ought to be, so that Iowa in the future as in the past shall be known as the state where the dairy farmers receive more for their product than those of any other state and where the butter produced is of the highest quality and the value of the state's product ranks second to none. I thank you.

CHAIRMAN: If there is no other business to come before us at this time we will stand adjourned until 10 o'clock tomorrow morning.

THURSDAY MORNING, 10:45.

CHAIRMAN: The first thing this morning will be the election of officers. The present officers hold office until the first of January. The first will be the election of President and nominations are now in order.

MR. SHOEMAKER, WATERLOO: I do not think it is at all necessary that I should make a nomination speech in placing the candidate I have in mind. When I say that he is a worker that is endorsement enough. I have in mind none other than our present President. His past records speak for themselves. I think you will all agree with me that during his administration interest has increased in the manufacturing end and also that it has increased very materially in the production end. He has been instrumental, as no other President has, in interesting the dairymen themselves in the work of this association, and if there was no other reason for endorsing him for President that would be sufficient. I therefore take pleasure in nominating Mr. W. B. Barney, of Hampton.

Nomination seconded. On motion duly seconded the rules were suspended and the President elected by acclamation, Mr. Barney being duly declared elected President of the Iowa State Dairy Association for the coming year.

CHAIRMAN: The next officer to be elected is that of Vice-President. Nominations are in order.

MR. KIEFFER, OF NEW YORK: Mr. President, I move that we make Mr. L. S. Edwards, of Parkersburg, our Vice-President for the coming year.

On motion duly seconded the rules were suspended and the Vice-President was elected by acclamation.

CHAIRMAN: The next is the election of Secretary. Nominations are in order.

MR. NITERT, OF WALKER: Mr. Chairman, I desire to place the nomination of a gentleman that we are all acquainted with; a man that has risen to his present honorable position through labor and merit, beginning at the bottom of the dairy and creamery interests. I realize that he needs no eulogy from me; he has held the office for the past year, has discharged his duty with honor to himself and credit to the state; he has been diligent at work in the best interests of this association and the great dairy interests in the state of Iowa, both day and night, and some have told me that he has even desecrated the Sabbath in this same work. How true this is I can not say, but if he has done it in the interests of the dairy business I do not think that when he meets St. Peter he will be turned down. I do not think it is necessary for me to say more, and I therefore desire to place the nomination of our present Secretary, Mr. W. B. Johnson, of Des Moines.

On motion, duly seconded, the rules were suspended and the Secretary was elected by acclamation.

CHAIRMAN: The next is the election of treasurer. Nominations are in order.

MR. STEPHENSON, OF LAMONT: Mr. Chairman: Realizing as we all do the necessity of having a man for Treasurer that is honest and upright in every particular, realizing that we have had this kind of a man for the last two or three years but who has told us he could not serve us further in this capacity, I have the pleasure of nominating Mr. F. L. Odell, of Des Moines, for Treasurer of our association for the coming year.

On motion, duly seconded, the rules were suspended and the Secretary instructed to cast a unanimous ballot for Mr. Odell as Treasurer.

CHAIRMAN: That concludes the election. The next will be an address by F. L. Odell, of Des Moines.

ADDRESS.

F. L. ODELL, ASST. FOOD AND DAIRY COMMISSIONER, DES MOINES, IOWA.

Mr. Chairman, Ladies, Gentlemen and Fellow Buttermakers:

It is human nature and a natural instinct given to man by the all Supreme Being, to regard his home and state as the one, and only one, for which to build his hopes and display his energies. This being true, we, the sons of Iowa, look upon our state with noble pride, and our loyalty is far reaching that our moral, intellectual and industrial standards may equal or excell that of any other state in the Union. Not that we want to boast or brag, but we want to be high up in the standard of excellence, counted among the thrifty, prosperous people of our land.

The home ties in our creamery industry, then, naturally exerts themselves to be in the front rank. Who is there among us not in conjunction with this kind of spirit, especially those that are toilers and workers in any good cause, in any business, commercially or intellectually. We should stand for what we think is right and just, for anything that will build up and advance the interests of all concerned.

A little review of this character and kind is in touch with the subject I wish to present—that we, as toilers and workers in the creamery business, will in the future, as we have in the past, work for the advance ment and betterment of the industry. It is true there are many things that would advance the creamery business in Iowa that we have not done, and many things we would like to do but can not for the reason that we have not the laws to back us. I would like to see a law rigid enough to compel every producer and every one that sells milk and cream, whether it is used in the manufacture of butter, household or culinary purposes, to deliver it in a sweet, sanitary condition, clean and wholesome, free from foreign and decomposed germs, excellent in quality and void of all bad flavors.

This is where I stand on this subject, and whether it can be so or not I wish it could. But one thing I am sure of, there can be a marked improvement in the quality and kind of raw material that is being sold from one end of the state to the other—that is being sold for the manufacture of butter, and again I say there can be a marked improvement in this material, and, plainly speaking, without hesitating or stammerings, let us have it.

The subject I am going to take up seems to be of vital importance. So much that it has worried many a buttermaker, caused him no amount of grief and trouble, and in the end lost for him his reputation as a good buttermaker. The commission merchant, likewise, has been in the game, not from a maker's standpoint, but from a seller's standpoint, and he, to say the least, has contributed his share of grief. Then comes the consumer, another party in this drama, and one whom should not be left out. The consumer is the one that strikes the fatal blow when he absolutely declines to pay out his hard-earned cash for any but a good, sweet and wholesome butter. The consumer is looking for good butter, and he should have it.

Now it is not my purpose to chastice the maker, but it is my purpose to chastice the producer—the one that delivers the raw material. He is the one I am after. The careless, unscrupulous and unclean producer is the one I want to talk to and about. Thousands of dollars are spent trying to doctor up this cream, and thousands of dollars are lost because of this inferior product. There is always some who will tell a producer of this character that his cream is good stuff (at the same time dreaming of a new customer from his competitor) whether it is or isn't.

To get down to the point. Can we expect under existing conditions to make better butter next year, and the next and the next? I will leave that to you.

I do not mean to say that all butter is poor, for there is a lot of mighty fine butter being made, but I am speaking of the poor butter due to carelessness on the farm, the place where it is kept before it is offered for sale or brought to the creamery.

A great many farmers deliver a fine article—clean, sweet and wholesome, but what is the incentive, when it has to be mixed with the poor and all the efforts of the one who tried to deliver a good article is destroyed by the one who is careless and unclean. I say again, that it is the dirty producer we must get after. Something must be done to better the conditions, either in an educational way, teaching and enlightening the producer or passing laws compelling them to do certain things necessary for a better raw material. Butter graces the table of nearly every home in the land, and why should we not always have good butter? Would not the buttermaker be tickled if he could always receive raw material in such condition that he could make fancy butter every day? The commission man would, in turn, rejoice. How would the consumer like it, and how about the creamery business in general, from the producer to the consumer?

Iowa is a state that should make a definite and distinct stand for quality in every sense of the word. In union there is power, and in union there is strength. If every creamery would use their influence in the territory they occupy, if every creamery (co-operative, individual or centralizer) would go to work for quality, for the betterment of the dairy industry in general, for quality of the raw material, if this should happen we would astonish the markets of the world. If this would happen we would see such a growth and development in the dairy business as never has been before. If this should happen the press would herald it from sea to sea, from pole to pole, and the moral effect would so strengthen the interest that other states would follow.

This would be one of the easiest things in the world to accomplish if every creamery in the state would agree not to accept bad cream; if one creamery refused it no one else would take it and the matter would be settled; if they would agree to instruct and enlighten the producer as to the proper care of his milk and cream. Educate them to the fact that it must be brought to the creamery in a certain condition, that it must be cooled to a certain temperature and delivered every so often. Is there anything impossible about that? Would it not be a great sight better to do this than to take the cream the other fellow refuses? Just so long as creameries and buying stations do this just so long poor butter will be produced.

I believe this convention as a body should take a stand for quality. I believe we should adopt a resolution pledging ourselves to work for better quality of milk and cream; that we condemn careless and uncleanly methods on the farm; that cream must be delivered every other day in summer and at least every third day in winter; that cream must be cooled to at least 60 degrees immediately after separation, and while it is kept on the farm it must be kept in a good, clean place. I believe we should petition our next general assembly to pass laws making it a misdemeanor to keep a separator in other than a perfectly sanitary place, and to keep the milk and cream in like manner; giving power to all state and federal inspectors to prosecute and fine any and all violators; that this authority be as powerful on the farms as in the creameries. I furthermore believe this convention should appoint a committee to draft resolutions incorporating this matter and present to the legislature. It will cost the state practically nothing to enact such laws, and I believe if the matter is brought before them properly they will act upon them.

Mr. Johnson has a set of resolutions that meet the requirements in nearly every way except that they do not say the hand separator "must" be taken out of unclean places, as well as the milk and cream.

I do not claim that such laws would end our troubles. Far from it, for we would have the same troubles to contend with and it will take all our executive power and ability to combat the evil, but no great battle was ever fought without some sacrifice and loss, without contention and strife, but in the end it will be a great benefit to the people.

Another thing, we do not have enough inspectors to cover the state and meet all the rejuirements such laws would demand, but the creameries could spread printed copies of the law broadcast over their territory. This, with the occasional visit from an inspector and perhaps a fine, would tend to keep the people on the watch.

Not long ago I was talking with a Danish buttermaker who had only been over in this country about two years. He was telling me the difference in regard to the dairy laws in Denmark and the United States. There the farmers have to keep their barns in a clean condition. Everything has to be just so. Cleanliness is the word. They have inspectors for the rural districts, as well as for the creameries.

In conclusion, let me say I would like to see Iowa be one of the first to herald the news that she has taken a forward step to try to adopt measures whereby the quality of her dairy products can be improved. A state has beautiful homes and thriving cities, a state that is rich in lands and cattle, a state where intelligence and intellect is equal to any other locality in the world, a state that should boast of the quality of her butter. It would mean millions of dollars to her people, for the markets of the world would be asking for our butter. It would mean that a producer who attempted to market a stale and unwholesome can of cream would be made to feel that he had committed an unpardonable sin.

These are not impossibilities. It only requires the united effort of the creamery industry at large, it only requires the will and stick-to-itiveness to carry it through, and the necessary laws to back us.

If we want to make better butter then let us rally to the front. Call the united forces of the business to arms, buckle on your armor, go out and fight the evil. Do more than grumble about bad cream. Join forces and work in harmony for quality and for laws that will help you and the whole dairy business in general.

Ring out the glad tidings that Iowa's loyal creamerymen are going to work for quality. The zenith is on yonder mountain top and the banner is inscribed with the word "Quality." Rescue it and the vanguard of safety will carry us on to higher and nobler things. I thank you.

THE CHAIRMAN: We have quite a little time and we can have a few minutes for discussion.

DISCUSSION.

MR. ECKLES, OF MISSOURI: I think that this question of good butter is largely in the hands of the creameries. What incentive is there to the farmer to produce a clean and sanitary product when his neighbor gets the same price for a dirty product. It seems that the creameries ought to go for some of these conditions themselves. We must furnish instruction for the farmer and teach him how to deliver his milk and cream to the creamery in good condition. That is the first thing to be done.

MR. BOWER: We certainly need laws like Mr. Odell has outlined, and we need men to enforce them. I do not think for a moment but what it is possible to enforce them. In my home territory we have thirty inspectors going around among the farmers enforcing the laws. As a result Canadian cheese stands throughout the land for quality. This is also true in Denmark. The buttermaker should do all he could along this line, and I believe that government inspection is absolutely necessary along with it.

MR. CREDICOTT, CHICAGO: I wish to say a word along this line. I have had a chance to observe the butter quality in the market, and when I made the statement that the average of our quality was deteriorating I was severely condemned. I saw in Chicago the other day a sign for oleomargarine which was very suggestive. It was in a street car. It read: ''The user of Holstein butterine has a guarantee of purity and cleanliness that the user of creamery butter has not for the reason that it is Government inspected." That is the most suggestive thing in the way of advertising I have seen.

Mr. Odell: I may say before I leave this that I studied this matter a great deal before I framed up my talk, and I thank these gentlemen who voiced with me. I know how these conditions are and I am fully convinced that we will never make better butter until something is done to relieve conditions. We never can get down to business until the state and the state dairy association goes at it and both work in harmony—for quality. What the people want is better buter and they should have it. I am a crank on this subject, but I have studied it and I am interested in the bettering of conditions.

The following resolution was read by W. B. Johnson and passed by a vote of the convention:

Regulating the handling of cream from the producer to the manufacturer: Cream being a perishable article, we insist that steps be taken to preserve by reducing the temperature to that degree whereby the development of bacteria will be retarded. Knowing that after a certain amount of putrefaction exists in cream, such as a high state of fermentation caused by the holding of cream too long and at too high a temperature before delivery is made, that the same connected with the unclean conditions as exists throughout the country at the present time due to the lack of care of the farm separator, the place where the separator is kept along with the cream and other utensils with no regard to sanitation or temperature, the cream reaches a state where there is danger to the consuming public when it is manufactured and placed on sale as a food product.

Second. For regulating the delivery and the acceptance for shipment and the transportation from the station to the manufacturing point which is being carried on at this time in a most deplorable manner, delivered in all kinds of conditions, at all temperatures and transported in all ways, such as baggage cars, box cars, express cars, etc.

Third. To eliminate the unjust and inaccurate testing which is practiced over the state and is the cause of a great deal of disturbance and illegitimate competition, making the honest man with ability subject to all kinds of charges as to dishonesty and inaccurate methods that are being practiced at the present time.

And we do hereby petition the general assembly for the enactment of a law:

First. That the field men of the Iowa State Dairy Association and the State Dairy Commissioner's department be empowered with authority to inspect the sanitary conditions at the farms, that the law shall provide that the producer of cream shall properly wash and clean each hand separator immediately after it is used; that cream immediately after separation be cooled to a temperature not exceeding 60 degrees and be held at such temperature until the same is delivered to the purchaser;

that such cream shall be delivered every other day in summer and not to exceed every third day in winter; that all utensils used in the handling and caring for cream by any person whomsoever shall be kept at all times in a clean, hygienic and sanitary place.

Second. That any person, firm or corporation buying cream in this state shall be required to maintain a clean, hygienic and sanitary place for the care and handling of cream and shall provide the ncessary equipment for the keeping of such cream at a temperature of not to exceed 60 degrees and shall not offer for shipment or sell any cream which is at a temperature exceeding 60 degrees, and that all common carriers carrying cream shall be required to keep the same in a clean, hygienic condition and at a temperature not exceeding 60 degrees.

Third. That all persons operating the Babcock test used for determining butter-fat sold or purchased shall be required to sustain an examination as to his fitness therefor, such examination to be given by the State Dairy Commissioner of the State Experiment Station, with power to annul certificate at any time that examination shows inability or dishonesty in the performance of operation. Also that proper penalties be attached for non-compliance of the above. The above is without discrimination and is in justice to the protection of legitimate business and public health.

The Chairman: The next matter is the presentation of medals and reading of the scores. Mr. Johnson and Dairy Commissioner Wright will take charge.

Mr. Wright: We have been holding, you know, at Des Moines a six months' Scoring Contest. Two of the numbers were not under the commissioner's department this one and the State Fair scorings—but we have had four others conducted by the state and the scoring has been done by the assistatnt dairy commissioners. We agreed that a certain New York gentleman was to buy the butter. He was to charge us 2½ per cent commission instead of the usual 5 per cent, the other 2½ per cent being donated by him for this purpose. That matter was arranged in the beginning and the butter from five scorings has been sold to that gentleman, and the proceeds, less the five per cent commission, have been remitted to the respective winners. Two and a half per cent commission was his for selling the butter, 2½ per cent remains in my hands for the purpose of giving prizes for the four scorings. The State Fair gave prizes of their own and this organization gives prizes. We have had 675 tubs. The first scoring amounted to 176, and the last 66 tubs. I do not know whether it occurs to you, but it occurs to me that you can't run a scoring contest unless some one sends butter. It may occur to you also that there may be such a small amount of butter there that the expenses would be so great that it was not worth while, so the boys have made considerable effort to get out a fairly good representation. I was discouraged with the scoring held a year ago because it ran down to 30 tubs. It is well nigh useless to bother with it, so we are very much gratified at this number. We are planning on conducting a scoring during the next year and extend it a little, so far as time is concerned. I want to urge at this time that you send butter to these contests.

The 2½ per cent commission donated by the commission man amounted to $95, and this same man donated enough more to make it an even $100. I do not believe I violate any propriety in saying that the man who donated this is a personal friend of every one of you. I refer to P. H. Kieffer.

The winners in the four scorings of May, June, July and October, leaving out the State Fair score, gathered cream class, are:

May, J. R. Jackman, Clemons, 94½; June, C. H. Matravers, Casey, 95; July, S. Peterson, Luana, 94½; October, Watson Shick, Volga, 94. Whole milk. May, Fred Wills, Sumner, 97½; June, Wm. Wenthe, Sumner, 97; July, E. E. Mittlestdat, Delaware, 96; September, G. Steussi, Thorp, 95½.

SCORES ON BUTTER.

Iowa's convention had 221 entries of butter of which winners in the whole milk class are:

G. J. Gudknecht, Lone Rock	97
E. H. Homan, Waverly	96
G. O. Miller, Arlington	95½

Winners in the gathered cream class are:

R. R. Hadley, Eldora	94½
M. M. Sorenson, Superior	94
L. P. Nelson, Exira	93½

Following are the other scores at 90 and above:

William Ambrose, Tripoli	91
O. H. Beuhrer, Alta Vista	93
Fred Erickson, Seneca	93½
Andrew Hansen, Walton	91
Geo. Siebels, Palmer	91
B. H. Kuennen, St. Lucas	94
P. H. Peterson, Rake	93½
B. T. Soles, Fern	92
C. L. Mills, Sumner	93
G. S. Wing, Jr., Majuoketa	92
C. H. Cleveland, Monticello	91
D. W. Mohler, Ellsworth	93½
C. F. Bollig, Rodman	92

G. A. Palmer, Aplington	93½
N. O. Dahlen, Northwood	92½
L. B. Aleson, Dorchester	92
C. R. Conway, Garner	90
J. G. Ellinger, Aplington	90
A. W. Snyder, Dickens	91½
Martin J. Bobo, Algona	90½
J. W. Wedemeyer, Denver	94
M. N. Bates, Bridgewater	90
J. B. Feldman, Dyersville	93½
Chris Russler, Hawkeye	94
Robt. Bliss, Garner	91
N. C. Nielsen, Fostoria	91
F. D. Daniels, Grovehill	92
C. L. Woodsworth, New Hampton	93
H. F. Lenocker, Victor	91
G. Stuessi, Manchester	93
F. W. Bremer, Sumner	93
J. P. Whelan, Elma	95
Iver Barlow, Calmar	90
W. P. Muth, Waukon	90
Watson Shick, Volga	92
C. H. Matrevers, Casey	92
G. T. Shaunce, State Center	90
J. L. Curist, Hull	93
M. J. Goodnow, Washta	91
P. O. Knutson, Thor	92
C. W. Davis, Ashton	90
F. M. Zell, Sumner	93½
Chas. H. Woodiwiss, Little Cedar	91
E. A. Jensen, Scarville	92½
Sig. Klemsrud, Osage	90
Geo. H. Dushane, Osage	90
Chris. Nelsen, Exira	93
H. E. Fowler, Hanlontown	91
Joe. P. Bogh, Rutland	93
Wm. Gossman, Humboldt	93
Jobe Kennedy, Le Mars	91
E. E. Star, Lake Park	91
H. S. Allen, Alta	92
A. J. Spohn, Miles	90
H. M. Crocker, Clarksville	92½
Wm. H. Kessler, Bassett	92
P. J. Kolbet, Waucoma	90
Fred Lehman, Monticello	92
Ira O'Neel, Clarion	91
C. H. Vanderham, Belmond	91½
A. H. Bentz, Delhi	93
John R. Lauber, Wellman	92
A. J. Herman, Maple Leaf	91½

Frank Bowdirt, Fairbank	93
C. E. Batchelder, Springville	92
F. W. Stephenson, Lamont	92
Wm. Kellenbach, Bremer	94½
L. C. Peterson, Story City	93
Ben Frank, Somers	94
J. A. Dostal, Protivin	90
F. W. Stickman, Ionia	90
F. W. Herrel, Waterville	91
G. W. Baitinger, Ladora	92½
J. C. Hall, Ottumwa	93½
J. M. Zubrod, Hopkinton	92
U. A. Harvey, LaPorte City	93
J. J. Boland, Wesley	93
G. M. Miller, Fayette	92
N. H. Trimble, Alden	92
C. B. Bracy, Maynard	94
J. M. Woelert, Scotch Grove	90
W. O. Bradley, Holstein	93
A. E. Banta, Wheatland	93
R. J. Erb, Masonville	92
J. A. Reid, Webb	90
G. R. Jackman, Clemons	93
C. C. Bomberger, Dunbar	93½
T. Smorenburg, Pella	91
C. C. Clifton, Thomson	91
W. D. Wenthe, Sumner	93½
H. H. Grove, Plover	91
O. Hauge, Ossian	91½
O. Hicks, Guernsey	90
Warren E. Cline, Nemaha	93½
J. H. Neil, Malcom	92
W. E. Mittlestadt, Manchester	93
O. C. Capper, Rogers	93
H. E. McCormack, Marcus	93
Bert O. Brownlee, Kanawha	92
F. J. Schroeder, Wadena	92½
C. J. Rhode, Manchester	93
John L. Clark, Gilbertsville	93
Geo. Goodsell, Rowan	90½
I. R. Moon, Boies	92
Henderson, Sawyer & Co., Central City	94
Reinbeck Creamery, Reinbeck	92
Sam Saveried, Story City	93
Frank L. Larsen, Downs	90½
S. L. Patterson, Austinville	91
Henry Piegors, Waverly	91½
A. H. Ady, Prescott	91
B. O. Squires, Janesville	92½
Fred Herzog, Hubbard	90½

C. T. Knutson, McCallsburg	93
Ralph W. Howard, Dubuque	90
J. T. Hanna, Lone Rock	94
R. W. Chadwick, Waterloo	90
H. C. Koeneke, New Hartford	92½
Thos. E. Sadler, Oelwein	94
S. O. Jorgensen, North Branch	91½
F. W. Shellman, Ayrshire	94
P. D. Nelson, Morehead	91
Johannes Johansen, Exira	92
Chr. Rasmussen, Bayard	91
A. L. Remington, Ruthven	93
J. J. Brunner, Osage	93
A. W. Finuf, Curlew	92½
S. W. Laird, Walker	93½
H. R. Bullis, St. Ansgar	93
J. M. Taff, Grand Junction	90
Henry Ambler, Cedar Rapids	90
J. F. Fisher, Garnavillo	90
A. J. Doleschal, Bancroft	92½
Earl E. Mittlestadt, Delaware	94
C. A. Nurell, Irvington	94
Frank Brunner, Charles City	92
M. E. Brunner, Osage	90
L. P. Anderson, Algona	90
Wm. Widdel, Dewar	92
B. R. Churchill, Grundy Center	92½
J. F. Cummings, Alpha	94
Geo. L. Hatter, Dyersville	90
C. A. Day, Sumner	94
Fred Wills, Sumner	92½
E. Weiss, Charles City	91
H. J. Binger, Charles City	90
J. Roepping, Afton	91
H. E. Forrester, Fredericksburg	92
Geo. Wick, Roland	91
Peter Thuessen, Kimballton	90
S. Peterson, Luana	90½
F. D. Shiflet, Fenton	94
J. F. Sharp, Newell	92
Julius Brunner, Charles City	93
V. E. Kranz, Schaller	93
R. O. Rae, Des Moines	90
Robt. Wagoner, Randalia	93
F. H. Fisher, Greene	93
R. S. Bergsather, Northwood	91½
L. L. Flickinger, Fredericksburg	91
Frank Vallantyne, Benson	93
L. S. Edwards, Parkersburg	94
L. C. Langeson, Colter	92½

Center Creamery Co., Harlan	92½
Carl Meier, Denver	91
E. M. Guiney, Tripoli	91
C. E. Carr, Frederika	91
C. P. Elliott, Cascaden	91
J. B. Domayer, Dyersville	93
T. R. Wilson, Mallard	92
O. F. Courbatt, Shell Rock	92
L. W. McCreery, Early	90

THURSDAY AFTERNOON, 2:15.

Chairman: The convention will please come to order, and the first on the program will an address on "Breeds and Breeding of Dairy Cattle, and Why It Pays," by T. J. Julian, of Algona.

BREEDS AND BREEDING OF DAIRY CATTLE, AND WHY IT PAYS.

T. J. JULIAN, ALGONA, IOWA.

Mr. President, Ladies and Gentlemen: Perhaps you buttermakers think because you make up the finished product that you are the whole thing, but I want to tell you that you are only one of the small cogs in this great dairy wheel. The dairy cow is the foundation of the whole dairy business.

There are four well known breeds of dairy cattle in the United States, viz.: Holsteins, Ayreshires, Jerseys and Guernseys. The Brown Swiss and Dutch Belted cattle are now being bred exclusively for the dairy, but are not so well known as the four breeds given above.

The Holsteins are the oldest distinct breed of cattle in the world. When Caesar conquered Gaul the black and white cattle were found in the northwest portion of Europe. As this portion of Europe is famous for its soil fertility, abundance of rich grasses and production of large crops of grain, it naturally follows that the Holsteins should be of large size, a good feeder and a great producer of dairy products. Bred for over 2,000 years by these painstaking Hollanders, they have become so fixed in dairy characteristics that they always stamp the black and white color on their off-springs, no matter with what breed they are mated. They are the largest producers of milk in the world.

The Ayrshires as a distinct breed dates back over 150 years. A cross of the native cattle with cattle from the Alderney Island was the foundation of the breed, environment, feed, selection and care have made the Ayrshires one of the greatest of dairy breeds for certain sections of the country.

The Jerseys have been bred on the Island of Jersey for nearly 200 years. In beauty they out-class all other breeds of cattle. Being bred and raised on a soil noted for its great fertility, these cattle take of the peculiar characteristics of the soil as indicated by their size and producers of the richest milk of any breed of cattle in the United States.

The Guernseys are almost identical, being a little larger, different in color, being a yellow color, milk not quite so rich but of a distinctly yellow color.

The Brown Swiss is comparatively a new breed in this country, although bred for centuries in Switzerland. They are more of a dual purpose cattle, although now breeders are turning more to the strictly dairy type. The same may be said of the Dutch Belted cattle. So very few are being bred in the country that they are comparatively unknown.

We would like to urge on the buttermakers of doing all in their power to encourage the farmer who patronizes his factory in all that he does toward bringing a better quality of milk or cream, and also point out to him better ways of feeding and caring for milch cows.

To do this he must exercise great tact and skill as human nature is such that oftimes the farmer resents any information however good. We think the buttermaker should visit his patrons, especially about milking time; note how the work is done. See how the feeding is done, and of what it consists of. From his observations among the different dairies he will be in a position to explain to the poorer class of dairymen how the more successful men are breeding, feeding and caring for their cows. He can also be a distributor of the best dairy literature among his patrons. Such papers as Kimball's Dairy Farmer and Hoard's Dairyman are the best published in the west for dairymen.

Before we give our ideas on building up a dairy herd, we would like to tell how to build up a dairyman. When a farmer decides to change his system of farming to dairy farming, he must re-learn a great deal he supposed he knew about cows. The type of cow, her feed, care, environment, must be radically different from what he has been in the habit of doing. We would strongly advise him to take a six months' course of reading Kimball's Dairy Farmer and Hoard's Dairyman. We advise these two papers because dairying in all its branches is the main issue and not on the side as with the rest of our agricultural papers. They discuss breeding, feeding, caring for and rearing dairy cattle. What feeds and how to raise these feeds to the best possible advantage. They tell what the best dairymen are doing and what they are making per cow each year. To the expert dairyman they are indispensible. To the average dairyman they are a source of knowledge each issue. To the beginner in dairying they offer kindly advice, stimulating and encouraging him in his new effort by pointing out the success of the best dairymen and arousing in him a spirit which will lead to success.

In breeding up a dairy herd, there are four foundation principles that must be strictly adhered to or followed if success is to be secured. Each one of these principles is inter-dependent on each of the others, and all four must be mixed and blended to make a successful and profitable dairy. They are breeding, feeding, care and selection.

In breeding up a dairy herd, type must be the first consideration. Where milk and butter are the prime object in building up this herd, this end should be constantly held in view. Let the dual purpose idea strictly alone. It is a false and unprofitable doctrine. Having selected the breed you like best and is best suited to your soil and environment, then comes the selection of a sire, for the foundation of your future success or failure in building up your herd. He is the corner stone upon which the whole structure, whether for good or mediocre, your herd building stands. He should be selected from a long line of successful performers. Have size, constitution, a highly nervous organization and individually a good type of the breed he represents. Price should be the last thing to take into consideration in the purchase of the sire of your herd. The best is the cheapest and is none too good. Having selected the best sire you can afford, your next attention must be given to the care and feed of the dam of your new yet unborn herd. She must be fed with suitable food to stimulate a large flow of milk and maintain that flow and at the same time nourish and grow the unborn calf so that when it comes into the world it will be strong and of good constitution and ready to begin its mission on earth, a superior cow to its dam. The calf should be kept growing and thrifty every day of its young life. Feed bone and muscle producing foods, see to it that it has a dry warm place to rest and sleep. A well lighted and ventilated room for winter and plenty of grass, water and shade in summer.

This treatment should contiue until 18 to 20 months old, when she should be bred. From now on greater care and attention should be given, as the young heifer has to make growth and assume the duties of motherhood, which make great demands on her and which must be met by a most generous supply of nourishing food and kind treatment. The sire used on this heifer should be of a higher order than her sire was, and if possible each succeeding sire should be superior in breeding to his predecessor. In this way each year selecting the most promising heifers, it will be but a few years before you will have a herd of highly profitable cows of uniform type and color and which will sell at a very much higher price than the ordinary cow. It is no exaggeration to say these high grade will readily sell for two to three times the price the original cows from which the start was made.

Now, will all this grading up pay? Would not the better feeding and care of our common cows give very much better results than are usually obtained from a herd of common cows. It undoubtedly would, but the offsprings of these cows would not be any better than the original stock. While in breeding from pure bred sires generation after generation the power of large production becomes a fixed characteristic. It also produces a uniform lot of stock which enhances the selling value of the herd very much, while on the other hand breeding common stock gives you all colors, types and sizes and with uncertain powers of produceitn. Now, will it pay to thus grade up a herd? Go into any locality you please and the man who is making the most money dairying will be found to own pure bred or high grade cows of some one of the dairy breeds. Milk and butter is what we are feeding and caring for in a cow, and that cow is the best cow which yields the most money above cost of feed and labor, and this result can be obtained every time with a carefully graded herd of dairy cows, while with common or dual purpose cows the profit is very much smaller or none at all.

A comparison of the pure-bred dairy cattle and the common and so-called dual purpose cattle in the production of milk and butter or other dairy products might be made by comparing the best of each of these types of cattle. Colantha 4th's Johanna, the queen of all dairy cattle, produced in one year 998.26 pounds of butter-fat, equal to 1,160 pounds of butter; Yeksa Sunbeam a Guernsey cow, produced 1,000 pounds of butter in one year. A Jersey cow on test at the Colorado Agricultural College will pass the 1,000 pound mark. The best dual-purpose cow we ever heard of has not produced over 500 pounds.

Now, comparing the best with the best and these marked differences are noted in the production of milk and milk products, why will not this great difference hold good in the average dual purpose and common cow compared with the average high grade special dairy cow? It is stated the average production of the Iowa cow is 140 pounds of butter-fat. Now if the best of the special dairy cows yield from two to two and one-half times the amount of milk and milk products as does the best of the dual purpose cattle why does it not logically follow that the production of milk and milk products from the special dairy cow should be in the same proportion, namely, two or more times the production of the average dual purpose and common cow. We think this will hold good in almost every community. Why go on breeding this inferior stock? Why not begin at once the good work of grading up your dairy cows? Keep one-half the cows at one-half the expense for feed and labor to receive the same amount of net cash.

Some people believe we will soon overdo the dairy business. I confidently assert that while the youngest person in this audience lives it will not be overdone. The cities of our country are increasing both in number and size at an enormous rate. The consumption of milk and its products are increasing much faster than the ability to produce it. Milk is being used in numberless ways now that were unknown only a few years ago. Condensed milk goes to all parts of the globe. No place is too hot or too cold. It is everywhere. Down on the Panama Canal it is used and up in the frozen regions of Alaska. The trans-Atlantic steamers carry regular supplies. The ships that girdle the globe take along large quantities. Added to this increased demand for milk and its products is the strong desire on the part of many farmers to avoid the dairy business. Dairying as a business is confining and demands regular hours to be successful, and this confinement and regularity keeps many men out of the business and others go out just as soon as they are financially able to live without dairying.

So the man who goes into dairying now need have no fear of its being overdone, at least while he lives, and if he will closely study every phase of the business from the breeding, feeding and care of the cow, and the disposal of the product in the most profitable manner, he may rest assured of success and competency.

CHAIRMAN: We have with us this afternoon a man who was formerly with the Iowa State College, and, like many other good men, we lost him. I have the pelasure of introducing to you Prof. C. H. Eckles, of Columbia, Mo., who will talk on "The Selection of the Dairy Sire."

THE SELECTION OF THE DAIRY SIRE.

PROF. C. H. ECKLES, COLUMBIA, MO.

I come here today to speak concerning the selection of the sire and I believe this is a topic that is of great importance to the dairymen of Iowa. In my opinion one of the greatest mistakes being made today by most of the Iowa milk producers is the failure to select cattle adapted to their purposes. They have not yet got to the point of comprehending that the calf is not necessarily the most valuable product of the cow. Iowa ought to have five hundred dairy cattle today where there is one. It is most astonishing to find in a state making the most butter of any in the union that most of it is made from the milk of cows not especially bred for this purpose. In this respect this state is far behind Missouri. I believe there are more dairy bred cattle in four counties I can name in Missouri than in all Iowa. It is no wonder that the typical Iowa creamery, while getting all the cream it can handle in the summer, scarcely gets any in the winter. No wonder the average production of butter per cow is low in Iowa.

Don't understand me to say that the use of a dairy bred animal is the only thing needed to improve the condition. But it is one of the most urgent needs of the dairymen of this state today. We all recognize the importance of the selection of the individual cow. We all understand that not all dairy bred cows are good; some of the worst failures we find as milk producers are among the dairy breeds, even among the pure breds. But the chances of drawing a blank are less. Milk production has been bred into the dairy breeds generation after generation until its is a characteristic that is transmited fairly well.

What is the use in attempting to build up a profitable herd by selecting milkers from cattle bred like most of our Iowa cattle are bred, when only a few are more than ordinary and even when we do find a good one she will not transmit her milking characteristics to her offspring with any regularity. If we are going to milk cows, why not take advantage of what has been done in the past by way of developing milking qualities and breed to dairy bred sires that can be counted on to transmit dairy qualities?

It does not make so much difference what choice a man makes among the dairy breeds, so he sticks to it, but by all means select a dairy bred sire and breed up in that direction.

The second point which I wish to emphasize especially is this of selecting a dairy breed and then sticking to it. The crossing of breeds is one of the worst practices common to cattle breeders. The man who has Jerseys sees his neighbor's Holsteins producing much more milk and bigger calves and he conceives what he thinks is a very clever idea; he will cross the two and get the rich yellow milk of the Jersey and the enormous quantity of the Holstein and the big vigorous calves. What is the result?

Now, it is a well known fact that the most artificial characteristics of an animal are the ones most easily lost in breeding. The rich milk of the Jerseys is the most artificial thing about them; the enormous quantity of milk is the most artificial thing about the Holsteins. The cross-bred Jersey Holstein is most likely to combine the small quantity of milk characteristic of the Jersey with the thin milk of the Holsteins. There are, of course, exceptions, but even with these there is no telling what will result from the second cross.

It has long been an axiom of the breeder that the sire is half the herd, and it is generally accepted as a fit expression of an important rule. The skillful breeder of any kind of stock does not need to have it pointed out to him how important it is that the sire be properly selected. If he is a skillful breeder, it is largely because he realizes the importance of the sire and knows how to select him. While the skilled breeder realizes the importance of this in breeding, the average dairyman does not give the question of the selection of the sire one-tenth the attention the importance of the question demands. Thousands of men make use of a scrub or grade sire on account of mistaken economy in cost rather than pay a few dollars more for an animal that is almost certain to transmit desirable qualities.

It is not surprising that we have so many worthless cows. They come by their worthlessness in the majority of the cases from sires worse than worthless. Some of these scrub bulls are registered in the herd books.

The most forceful means I have at hand to illustrate the remarkable difference in sires is to show some results from our own herd.

In 1884 the Missouri Agricultural College bought four registered Jersey cows and the entire herd we have on hand today is descended from these cows. Of course, herd bulls have been purchased from outside, but no female has been bought. Since 1892 complete milk and butter fat records have been kept of every cow. Up until 1901 practically every female was retained in the herd regardless of her dairy qualities. These conditions give an opportunity to study the effect of sires which can hardly be duplicated anywhere.

The first bull used was Missouri Rioter, a son of Bachelor of St. Lambert. There is no record indicating the dairy quality of his dam. In fact, his sire is the only animal in his pedigree known to be a strong breeder. This bull was a very weak breeder. His daughters averaged 4,336 pounds of milk per year while their dams averaged 5,380 pounds, a decline on the average of 1,044 pounds of milk per year each. The average fat production of the dam was 234 while the daughters averaged only 216, a decline of 18 pounds per cow from the dams to the daughters.

The income from ten daughters, counting milk at six cents per quart, fell $313.20 per year behind the dams. Counting fat at twenty-five cents the loss was $45.00. As long as this bull remained in the herd it was going backward in production instead of ahead. Suppose the herd had had thirty daughters of such a bull. Each year we would have been $135.00 behind what the dams produced, counting fat at twenty-five cents. If these cows were milked six years each the total loss would be $820.00. This sum would buy several good bulls.

The next bull was Hugorotus. This was a cheap bull without any high tested animals in his pedigree. His mother, however, is said to have been a good cow. The daughters of this bull were inferior to their dams in milk production but on account of a higher per cent of fat they gained slightly in fat production.

Ten daughters fell a total of 3,770 pounds of milk per year behind their dams, but gained 100 pounds of fat. The general results of using this bull were disastrous. In fact, the poorest animals ever in the herd were his offspring. The averages shown are made as good as they are only by the fact that the two full sisters sired by this bull, through some "nick," proved first class animals.

When this herd was culled on milk records alone nine out of the eleven daughters of this bull then in the herd were sold to the butcher The two remaining were the full sisters mentioned. As long as this bull was in the herd the general tendency was backward.

The next bull at the head of the herd was Lorne of Meridale. This bull had a splendid pedigree from the standpoint of records and his offspring show the results. His daughters, with one exception, were all superior to the dams.

The average milk production was raised from 4,542 pounds per year to 5,751, The fat production from 220 to 280 pounds per year. At butter fat prices the ten daughters of Lorne of Meridale returned each year $150.00 more than their dams. What a difference from the results from Missouri Rioter.

If we had milked thirty daughters of this bull six years each, their product would have exceeded their dams in value $2,700.00, while the daughters of Missouri Rioter went $939.00 behind or a difference in thirty cows in six years of $4,639.00 in actual income.

What would be the value of Lorne of Meridale in a large herd? We cannot say, but as a business proposition an owner of a large herd would better pay $1,000.00 for him than accept Missouri Rioter as a gift. Yet if he had been offered for sale when mature, the chances are that instead of bringing what he was worth, he would have brought little more than a bull beef price.

The next herd bull was Missouri Rioter 3d. This bull was the son of Missouri Rioter, and was the only real good thing this latter sire left in the herd. The remarkable qualities of Missouri Rioter 3d may come in part from his dam which was the best cow in the herd up to that time and, like the sire, the daughter of Bachelor of St. Lambert.

The best cows ever in our herd were sired by Missouri Rioter 3d. From dams with average records of 4,609 pounds of milk he sired daughters whose records average 7,154 pounds. The dams averaged 238 pounds fat per year and the daughters raised this to 348.

Ten daughters of this bull produced $275.00 worth of fat per year more than their dams. Counting this on the same basis as before thirty cows for six years we have $4,950.00 worth of butter fat produced by the daughters in excess of that produced by the dams.

What would be the value of this bull had he been owned by an association of neighboring dairymen where he might have had one hundred daughters or more?

This bull was raised on the college farm and as is often the case, because he was a home product instead of coming from a distant state, he was not counted of any special value and was sold from the herd without any record ever being made as to his purchaser and he was never transferred on the records of the Jersey Club. His remarkable breeding value was recognized when it was too late and now we would like the chance of giving $1,000.00 to have him back.

Minnette's Pedro is the last herd bull that has a sufficient number of daughters to give figures of any value. It may be observed that the herd remained practically at a standstill while he was at its head. In general this bull was not a very prepotent bull since we have wide variations and a lack of uniformity in his offspring. Among them are some excellent cows and some worthless. From the good dams we secured good daughters; from inferior dams the same quality of daughters.

These figures show the immense difference in the way dairy qualities are transmitted even while all are pure bred animals. The selection of a herd bull is a very serious matter for the man who is trying to build up his herd and increase the average production. The more valuable the herd and the higher developed they are in the scale of dairy production, the more serious is the problem.

One of the chief difficulties is that practically nothing can be predicated from the looks of the animal, if he has the inherent characteristics of transmitting good dairy qualities or not. Who will undertake to judge by the appearance of a bull if he is one that will transmit dairy qualities as did Missouri Rioter 3d or whether he is as worthless as Hugorotus? The man who will discover some means of so judging will confer a benefit on breeders that can scarcely be estimated.

There are two principles that are especially concerned with breeding and should be kept in mind. The first is that "Like produced like," and the second is the law of "natural variations."

The cow in the condition nature made her undoubtedly produced only milk enough to feed the calf a few months until it could subsist on other foods. This milking characteristic was transmitted quite regularly. It was a case where like generally produced like but some cows even then were undoubtedly better milkers than others, due to the law of natural variation. The principles of selection did not come in to retain this variation and no improvement in this characteristic was made.

After cattle were domesticated the same conditions existed but finally man began taking advantage of the natural variation and began saving breeding stock from those having the characteristics, such as greater milk production, which he found to be valuable.

The animal which is different from others of its kind by natural variation will reproduce this characteristic in a certain proportion of its descendants. If this same natural variation is in the ancestry of both parents, the chance of transmission is much greater but under any circumstances only a part of the progeny will have the new characteristic.

The dairy cow of today is largely an artificial product or perhaps it would be better to say she is an abnormality since her mammary glands have been abnormally developed by taking advantage of the law of natural variations.

The rule of "like produces like" is only true to a limited extent and the farther we get away from the original type in breeding the smaller proportion of cases where it holds good. This accounts for the fact often observed that the offspring of a phenomenal cow are often disappointing. However, it will be found that on the average there will be more good animals among the offspring of such a cow than among those from a cow of moderate or low dairy capacity. We must always expect to find inferior animals appearing frequently in all herds. No breeder can prevent it but no good breeder fails to reject the inferior ones promptly when discovered. The higher developed we get our cows, the more difficulty we must expect in keeping them all up to the standard.

In selecting a bull for a mixed herd or one of low dairy capacity any well bred bull of a dairy breed with good producing individuals behind him is certain to benefit the herd. Even for the grade herd the exceptional bull that will transmit qualities higher than the average of his breed is worth more than two or three inferior ones.

There are two courses open to the man in selecting a herd bull. One is to buy a young bull on the strength of the records of his ancestors, and trust to luck to a certain extent that he will be one that will transmit the desirable characteristics of his ancestors to a high degree. As a rule such a bull will do fairly well at least in transmitting these characteristics. For the owner of grade cattle or herds of low dairy capacity, this method of selection does very well.

In selecting a young bull the pedigree, including the records of ancestors, is of as much or more importance than the individuality of the animal. The things to be looked for in the pedigree are first of all records of production by the female ancestors, especially the dam of the animal.

There are some who refuse to have a bull from phenomenal record making cows for fear the vitality of the calf will be weakened. The majority of breeders, however, want the dam to have the highest record possible, other things being equal. We cannot expect more than a few of her close descendents will inherit this high quality but the chances are better for them to average up well than they would be from a cow of lower productive capacity.

There is a general belief among breeders that the characteristics of the dam of the sire are transmitted stronger to his daughters than are the characteristics of any other female ancestor. This view has not been entirely demonstrated as yet but there is strong evidence pointing this way. Next in importance to the dam's record comes the records of the sire's daughters. If this bull has sired many high testing daughters the chances are good his son will also transmit these characters. Third in importance comes the grand dams and so on through the pedigree.

It should be kept in mind always that it is much more important to have a good animal for parent than a noted animal back in the third or fourth generation. Breeders often speak of having a Golden Lad, a Stoke Pogis, or a DeKol bull and when you examine the pedigree the animal mentioned is found in the. third or fourth generation, which means they consider the most important fact about the bull to be the 6¼ or 12½ per cent of the blood of the noted bull he may carry. The close ancestors are the ones that count.

Care should be taken to discriminate between official records and private records of milk and butter production, especially where the latter are churn tests that test the ability of the buttermaker as much as he butter production of the cow. An official record means what it says and so do many private records, but there is always an element of uncertainty about the latter that detracts from their value. Much more attention should be given to years records than to those covering seven days. Of course, there are other things to be taken into account in buying a young bull, but the records of the ancestors is of first consideration.

In buying a bull of any age it should be required that he have a good conformation, strong vitality and constitution and good breed characteristics. In buying a young bull the choice should fall upon one from a cow medium to large for the breed. She should be a regular breeder and a cow of strong constitution and vitality. She should have a well developed, symmetrical udder and teats and a large year's milk and butter test, preferably official. While most dairymen favor the selection of a young bull as a herd bull, there always is the uncertainty about how he will transmit the dairy characteristics.

A tested bull. There is a more certain but more difficult way; that is to get an old tested bull, one who has sired daughters of merit and showed himself to be the exceptional animal wanted by every breeder. The most skilled breeders are always on the outlook for such an animal but many are never discovered and many others only after it is too late. Whenever possible it is always advisable to retain an old bull until the results of his breeding can be ascertained. Then if not satisfactory, the sooner he is gone, the better, but there is always a chance of finding a bull like Missouri Rioter 3d, previously mentioned.

The wonderful prepotency of Stoke Pogis 3d was not recognized until he had been sold for beef. Hengerveld DeKol, the great Holstein that recently died, on the other hand, was retained until it was discovered he was one of the greatest bulls of the breed and as a result he was sold for $1,500.00 at nine years of age for breeding purposes.

One of the great unnecessary losses among dairymen is the sacrifice of the bulls when they are mature and at their best. The average dairyman buys a young bull, uses him two years and offers him for sale without waiting to learn the quality of his daughters. His neighbor, instead of buying the old bull buys a young one and the older one that may be worth a fortune to the community is sold for beef while the neighbor is experimenting with the young one.

There is one danger connected with the aged bull that should be understood and guarded against. This is the introduction of contagious abortion. If I had a valuable herd free from this disease, I would exert the greatest precaution about introducing an aged bull. If I was not entirely satisfied on this point, I would select the young calf which is safe from abortion even if coming from a herd where the disease exists. I thank you.

Chairman: The next is an address by F. A. Leighton, of Des Moines.

BETTER MILK AND CREAM.

F. A. LEIGHTON, DES MOINES, IOWA.

So much has been written and so many discussions have taken place on the subject of better milk and cream that it is somewhat difficult for one to add anything new. But it is the one vital problem today which all dairymen are interested in and a subject upon which all up-to-date dairymen and buttermakers can agree.

I do not believe there is a person engaged in the manufacture of butter who does not desire a better quality of cream or the best quality of cream that can be produced. The amount of butter which he manufactures does not change this desire. The man who manufactures sixty pounds of butter a day is just as anxious to produce a good quality of butter as the man who manufactures six thousand pounds a day.

One of the most discouraging features in the creamery business is the poor quality of raw material, which the manufacturer receives from a certain percentage of his patronage. In every community there are a certain class of dairymen who do not care what kind of product they deliver to the buyer, providing they get the price. This is not only true with milk and cream, but it is also true with the selling of eggs. These people will deliver eggs to their buyer that they would not think of using on their own table, possibly never thinking and probably never caring whether the poor laborer, working in the sewer and trying to support a family on a small salary is liable to purchase these bad eggs and be compelled to stand a loss when they can ill afford it. The men or women who offer these stale eggs for sale are, nine times out of ten, the identical people who offer old and stale cream or milk for sale. I will guarantee that the farmer who gathers his eggs fresh every day and brings them to his buyer in a clean and sanitary condition does not offer for sale any old, stale or undesirable milk or cream. Now, this latter class of farmers do not need the attention of the dairy authorities nor do they have to be watched by the buyer of their product. Neither does the patron who reads Kimball's Dairy Farmer and other dairy journals sell the bad cream. You give me a thousand patrons who read these papers and I will guarantee nearly a thousand farmers who will not need radical dairy laws. The other class of dairymen are the men who are causing the mischief and these are the people whom we must regulate in some manner.

Undoubtedly the best plan whereby to compel this class to furnish a good article is through their pocketbooks, but this is not always successful. We have patrons who tell us that they would rather accept two or even three cents a pound less for their butter fat and deliver it once a week than to get the better price and deliver it three times a week. I do not look for very much relief on the quality proposition or on a plan of buying milk and cream on quality until some law is passed which will compel the seller to furnish a first class article, as well as compelling the buyer to reject any milk or cream not conforming to a certain standard.

We, as an organization here, might agree that we would leave this convention and commence next Monday morning to pay three cents less for poor cream than for good and we would conscientiously make this commencement, but it is the experience of creamery people that these agreements do not last. Someone violates the agreement and the creamery man who feels he has been wronged by the other creamery abandons the grading system and the thing is all off and more harm is done than good.

I believe the grading system should not be left to the will or pleasure of operators or creamery companies, but that we should have some law which should be explicit and which should state plainly just the sort of cream that would meet the requirements and then fine both buyer and seller if the conditions are not lived up to. Such a law will apply to the small buyer as well as the big one. The one needs supervision as well as the other. There has been considerable discussion recently among creamery people as to what requirements would bring about the best results. In Nebraska at one time a number of the creameries adopted the acid test and cream was graded according to the acid it contained. This plan was not practical as the class of buyers they were compelled to use were not intelligent enough and not versed enough in dairy matters to handle the test intelligently. However, this acid test plan would work out very nicely at our local creameries as the buttermakers in charge could handle the test correctly. Another plan which has been advised is on frequent delivery; namely, paying a price for cream delivered every two days and another price for cream four days old or older, while another plan is to grade on the temperature of cream when delivered to the buyer. All of these methods or every one of them would be practical if the state were back of them and would see that they were enforced.

The plan which I believe would be the best is as follows: Have the legislature pass a law making it compulsory for the sellers of cream to deliver it not over a certain age and not above a certain temperature. Also making it compulsory on the part of the buyer not to accept cream over a certain age and above a certain temperature, and then let our dairy authorities see that this law is enforced. At the first glance this will appear as a difficult proposition to undertake on the part of the dairy inspectors, but it would not be so burdensome if the proper records were kept by the buyer.

I do not advocate two or three prices for cream, according to its quality. I believe in one price for cream and instead of paying three cents less cream not of good quality, to absolutely refuse it if not up to the requirements of the law.

The main difficulty we find in the grading of cream is in the difference of judgment of different people. I am certain that these buttermakers present (and there are none better, Minnesota not excepted) would not all agree on the quality of cream of doubtful character. For this reason I am of the opinion that the standard should be on frequency of delivery and temperature and an excellent addition to this would be a requirement of not less than 30% cream.

I am optimistic as regards the future of the creamery business. I do not believe, as many would have us believe, that it is going to the "eternal bow wows." I do not believe the little innocent hand separator is going to eliminate the great dairy state of Iowa from off the map. We will have to meet this question in an intelligent and practical manner. And I firmly believe we are going to handle this matter in a more intelligent manner and get more and better results, but we must first take the mote out of our own eyes. If our neighbor sins it is no sign that we are justified in sinning also. Just as long, however, as one buttermaker or one cream buyer takes bad cream because his neighbor does, just so long will we be unable to get better results. Moral suasion is a good thing in some lines of busines, but it don't work in the cream buying business.

It is really a pity that laws must be enacted to force us to do the right thing. We had to have a law to prevent our buttermakers from shipping all the water down east and we have had to have a law to regulate the kind of color we should use. These laws were all necessary and it will be necessary for us to have a law to compel us to buy and sell milk and cream that will make good butter.

Now, just a word to the buttermakers present. No doubt you, at your creamery, like other people, receive a good deal of cream that is made into better butter by being taken care of properly. Now, the question is, are you all doing everything possible in the way of handling this cream to produce better results? I am afraid that too many buttermakers just take this cream in, cool it and churn it and the result is not a very good article of butter. If, on the other hand, they would grade this cream, cut out the cans that are not up to the standard, then pasteurize it all and use a good starter they would find that the results would be much better. It is still true that no one can make good butter out of poor milk or cream, but it is also true that even poor milk or cream can be handled so that it will make a better quality of butter than it would otherwise, but this cannot be done with half day buttermakers, and what I mean by this is to finish up at noon and then lock the creamery up until the next morning. I do not wish to be misunderstood. Buttermakers as a rule are hard working people and it is to be hoped that all of them will get away from the factory as much as possible, but you know and I know that many a vat of cream has been spoiled by neglect after it had been taken into the creamery in the best of condition.

I have not the figures to show definitely how many creameries take in hand separator cream in Iowa, but from what I can learn from the boys who travel over the state, fully two-thirds of them receive more or less hand separator cream. Granting this to be true, how many of these creameries grade this cream as it is delivered to them and have a seperate vat for the cream of doubtful character? I am very much of the opinion that the number of creameries who follow the above plan are in the minority. A great many buttermakers are afraid of offending their patrons by emptying their cream into a separate vat, possibly afraid that the patrons will sell to the other fellow. But would this be such a serious loss to the creameries employing these buttermakers?

It is true that every buttermaker or creamery manager who has the interest of his employers at heart desires to maintain the business and keep his make of butter up to a high notch and he feels that in order to do this every patron must be kept in line and the patron who brings poor cream is allowed to continue doing the same thing, probably in the hope that he will reform and do better. But these are not the kind of patrons that reform. They have got to have a big revival in their neighborhood and this revival must be conducted by the dairy inspectors, assisted by a county attorney and the town justice and it is surprising how a revival of this nature will spread. First John Jones over on the river hears of the good work and commences to investigate this dairy life. Then Sam Smith over on the hill gets affected and comes to the conclusion that the clean, up-to-date dairy life is the best to live and this spreads throughout the whole county and it does great good and there is much rejoicing, especially among butttermakers. Of course, some of these good people are going to backslide, but all there is to it is to get evangelist Johnson, exhortors Ross and Iliff, to hold another meeting and revive a few more Smiths and Jones.

The buttermakers could help to keep up interest in these revivals by writing up the particulars in their town papers and it would be very instructive reading matter in the shape of a clipping from the town paper mailed to each patron. Give it publicity. These revivals would not have the desired effect unless publicity be given them. Go into details minutely so that the dairy people may learn just what kind of dairy religion we advocate.

Now, there are one hundred counties in the state. I will guarantee that if four of these revivals are held in each county during the next year that the year following will see the best behaving, dirt-fearing and filth-fighting dairymen ever known in Iowa, and one thing we must remember, in these revivals we will have the help of a vast number of splendid dairymen. We will also have the moral support of millions of butter consumers.

I believe that the time is coming when most of the teachings of the dairy instructors will be direct to the producers of the raw material. Our imagination cannot conceive of the amount of good that could be accomplished if twelve inspectors could be turned loose in Iowa with good dairy laws back of them and with authority to enforce these laws. I believe that if the state of Iowa would spend $3,000.00 each on twelve inspectors that the increase of revenue to the state of Iowa would be at least twelve hundred thousand dollars or one thousand dollars on our investment of $3.000.00. I believe this estimate is not a particle too high.

In conclusiion let me add: Whatever we do, let us do it in a sensible and broad-minded spirit, remembering that whatever hurts one class of creamery men hurts all; that whatever benefits one class, benefits all. We must also bear in mind that every one who has money invested in the creamery business is interested in seeing that business as a whole bulit up and improved. Also remember it is much easier to tear down than to build up. I believe that if we put the same amount of energy in our own business as we sometimes put in the other fellow's, we would have nothing to fear from our competitors. The world is big; opportunities are plenty in our line of business. There will always be different systems of conducting the business, but there should be only one system used in getting a better raw material. We may differ on many things, but it certainly looks to me as though we all could agree on this one thing; namely, that we must have better cream and that to get it we must pull together. If we do not pull together the future of the butter business will remain in doubt. However, as I said before, I believe this creamery business in Iowa is going to get better each year and it will not be long before Iowa will not only continue to make the most butter, but will make the best of any state or nation.

Q. Don't you believe it would pay to grade this cream and make the poor quality up and pay those patrons what that butter brings, and pay patrons that bring the better quality more?

MR. LEIGHTON: Not unless you pay 20c a pound difference. I believe that we will never get any good results until we refuse absolutely to take poor stuff.

MR. BOWER: It makes me feel good to hear some of the big creamery men get up and tell us that we have got to have laws to make one price on cream and that there is only one grade of cream that will make good butter.

MEMBER: I think there is only one way to come to a settlement of this trouble. We should have a law compelling the farmer to bring his milk or cream to the creamery in good condition. We ought to have inspectors all over the state (we ought to have at least eight). Go to the creamery, inspect the milk and if it is not fit to work into butter go out on the farm and if he would not improve his quality fine him.

CHAIRMAN: I yould like to hear from Mr. Mortensen.

MR. MORTENSEN: I am a little timid to speak to you on this subject. I believe as you do that we should do our best to secure the best possible cream that could be secured, and I believe, as you do, that we should have inspectors and they should have the power to prosecute.

CHAIRMAN: As our time is growing short we will call on Dr. Scott, government inspector of the Waterloo packing house, who will talk on tuberculosis.

TUBERCULOSIS.

DR. THOS. W. SCOTT, GOVERNMENT INSPECTOR, WATERLOO, IOWA.

Mr. Chairman and Gentlemen: I have been asked to address you on the subject of tuberculosis, a somewhat burning subject, and in doing so I will be obliged to confine myself to only two or three phases of the subject. In a paper of this character I do not deem it necessary or wise to go into any lengthy discussion of the pathology of the disease. Suffice to say that it is a highly contagious disease, that it is common to man, to domestic animals, birds and many of the cold blooded animals. It is caused by the invasion of the system by a vegetable organism, known as the tubercle bacillus, and can not be produced in any other way.

This bacillus may be introduced into the system in a variety of ways, namely, by inhalation, by direct inoculation, by ingestion, etc. The bacillus appears to be able to penetrate the mucus membrane, at least in certain places, even when there is no wound or abrasion, and leave no trace or sign of its point of entrance. However, in its progress through the tissues it is usually soon arrested by a lymphatic gland, or in some other manner, and then it multiplies and causes the formation of tubercles.

After an animal, or a man either for that matter, becomes infected (and hereafter I shall confine my remarks more particularly to the domestic animals) the disease may develop rapidly, or it may progress very slowly and insiduously. Usually its progress is very slow and very sure. From one lymphatic gland it is carried in the lymphatic vessels to other lymphatic glands, or, perhaps, directly into the circulation and thence to the lungs or other vital organs.

There is no question, however, but that in many cases it remains a local disease for some time, and sometimes remains confined entirely to one lymphatic gland or chain of lymphatic glands throughout the entire life of the animal and may never give its victim but very slight inconvenience or trouble.

What are the manifestations of this disease? What symptoms, if any, does it present? In answering these questions, referreing particularly to the lower animals, I may say that in hundreds of cases, and indeed I might say in most of cases, there are no physical signs or manifestations whatever. This is one of the puzzling and perplexing phases of this disease. Our animals, such as hogs and beef cattle, come to the shambles at an early age. They are quickly matured and hence most of them are slaughtered at from one year to three years old, with the exception of the cast-off or worn out dairy cow, which, of course, remains in the dairy as long as she can show that she is at all profitable, which, in the case of the tubercular victim, may not be very long. But other hogs and cattle go to market quite young and, as United States Veterinary Inspector, it is my duty to inspect quite a number of them annually, both at anti-mortem and post-mortem inspection, and I can say that we can reject very few hogs or cattle at anti-mortem inspection, but at post-mortem we find in this vicinity in the neighborhood of four to six per cent of the hogs of all classes affected. I regret that I am unable to give you the exact percent of all classes of cattle found in this vicinity to be more or less tuberculous. Of the cattle of all classes that have come under my own observation about four per cent have been more or less tuberculous, and I know that I am conservative when I say that six per cent of dairy cattle in the state of Iowa are infected.

I am referring to the number affected and the number rejected at anti-mortem inspection to show you that up to a given point, or time, in the progress of this disease there are no physical signs of this disease. The animal looks healthy. There are no apparent signs of disease. And this is, as I have remarked, one of the perplexing phases of tuberculosis, for most men absolutely refuse to believe that there is much the matter with a hog or steer or a cow when it eats well, looks well and to all appearances is well.

Not long since I had a visitor, a farmer from Butler county, who happened into the packing house when slaughtering was in progress. Shortly after he came in we were finding some tubercular hogs. Soon we found we had nearly a carload of infected hogs, all fine looking, fat hogs, but many of them were badly infected, the lesions of disease showing extensively on the viscera and also on the carcass in a good many instances. After we had made our final examination of these infected hog carcasses there was, of course, some condemnations—some good looking carcasses that according to the U. S. regulations, had to be consigned to the fertilizer tank as utterly unfit for human food.

Our visitor at this juncture made vigorous protest, saying that it looked like an awful waste to put such good looking hogs in the tank; many a poor, hungry man, he said, would be glad to get such meat as that, and yet you are going to convert it into fertiilzer. But when I questioned him more closely and put the matter up to him individually, "Would you like to eat such meat, knowing what you do about the condition of the animal in life and this evidence of this loathsome disease, which you have witnessed here this morning; would you actually eat such meat if you knew it?" And he answered, "No, I guess I would not." "But," said he, "These hogs could be sold and enter into the general channels of trade and nobody would be any wiser." These carcasses most of them look all right now, since you have disected out those diseased glands and processes, and a butcher or nobody else, not even a veterinary inspector could see or discover anything that even looks suspicious about the most of them now.

Gentlemen, we hear such remarks almost every day with reference to this disease. Its progress is so gradual and insiduous, and after the animal is eviserated there may be no lesions left on the carcass which one could discover by any ordinary microscopic examination. Do not misunderstand me at this point, however, because we do see many carcasses of both cattle and swine where the inroads of tuberculosis are so extensive as to cover the whole pleura and pentoneum and involve almost every lymphatic gland in the carcass. And the remarkable feature about some of these extensive or generalized cases is that the animal may still have the appearance of health.

The disease is non-inflamatory as a rule and as a rule in animals there is not much disturbance of the temperature.

Quite recently a case came under our observation. A dairy cow supplying milk to her owner's family. The cow was a grade Ayrshire, a prolific milker, slightly thin in order, but not noticeably so for a deep milker, otherwise in apparent health. We were asked to test two cows on the place, this being one of them, as the owner was contemplating making additions to his herd. There was nothing unusual about her temperatures before the injection of tuberculin, but the next forenoon after the injection her fever rose typically, showing a decided reaction. The owner was advised to have her removed from the place and slaughtered at once, to which he consented and brought her to the packing house. The post-mortem revealed a case of extraordinarily extensive tuberculosis, confined almost entirely to the right lung and the right thoracic cavity. The lung and the walls of the chest on that side were almost completely covered over by tuberculous growths, and that lung itself was nearly a solid mass of hard tubercles. The other lung and the balance of the organs, tissues and glands were very little, if any, diseased, accounting for her healthful appearance.

I cite this case to show you how deceitful these animals may be. Here was a cow harboring this disease in one corner of her body, pouring out poison from every pore, scattering and disseminating the tuberculous germs with every step, with almost every breath, and her every exhalation and excretion of every kind and character, a positive menace to her companions, both human and bovine—going along day after day entirely unsuspected.

But on the other hand many cattle and hogs as they grow older if they are already victims of this loathsome disease begin to show symptoms, as one after another the organs that are of vital necessity to the life of the animal become involved. The animal coughs, becomes emaciated, the hair loses its lustre, the appetite may fail, the eye becomes dull, exercise fatigues and causes accelerated respiration, etc. There are no tissues or organs in the animal economy exempt from the inroads of this disease, and hence every case is peculiar to itself, you might say.

Gentlemen, it is astonishing how many of our hogs and cattle, too, are showing bone lesions now, such as a caseous condition of the vertebrae or back bone. Many of our cripples, among both hogs and cattle, are thus affected. Many hogs that drag their posterior extremities and are supposed to be suffering from rickets are the victims of tuberculosis of the vertebrae.

But we have dwelt long enough on this phase of the disease. We have endeavored to show you that physical signs are absent, that clinical symptoms are rare, that it is next to impossible to make a positive diagnosis of the disease by a physical examination.

And this brings us to speak of our present manner of diagnosis in the living subject, aside from bacterial or laboratory examination. I refer, of course, to the tuberculin test—tuberculin, an agent that is much talked of in these latter days and often much maligned and slandered—even among intelligent dairymen and in reputable agricultural papers and live stock journals, notwithstanding these discouraging facts, tuberculin, after being in use now for many years, is as truthful and reliable as ever.

I am not going to discuss the merits or demerits of tuberculin as a diagnostic agent. Suffice it to say that if there is anything settled conclusively concerning this disease it is that tuberculin is reliable and as accurate as anything human can be, when used intelligently and its fiindings correctly interpreted.

But we must pass to the consideration of the economic aspects of this disease, and here we find much of intense interest. Dr. Melvin, in studying this subject, has estimated that in the United States alone the losses are about $14,000,000 annually from condemnation, deaths, keeping and feeding unprofitable animals, etc., not to speak of legislation. In this connection I desire to call your attention to individual losses that are often overlooked, such, for instance, as the losses sustained by one farmer or stock owner unconsciousely sharing his neighbor's losses. To illustrate. Side by side live two farmers, each engaged extensively in mixed farming, with large dairy, beef and pork interests. One of these farmers' live stock are absolutely free from disease of every description, and tuberculosis in particular. His neighbor's live stock are infected. When they go to market with their products, the man with the clean stock has no advantage, for, as is often the case, their live stock presents about the same physical appearance. The price they receive is the same. Then he is at a positive disadvantage, for if they sell to a packer he buys them both with the knowledge that a certain percentage will be condemned, and I suppose he makes provision in the matter of price accordingly.

I believe if I were farming that I would make it a point to know the condition of my live stock with reference to tuberculosis and if I found the tuberculosis free, I would advertise that fact I would guarantee them in that respect to the buyer.

In the matter of dairy products the circumstances are substantially the same. Farmers and dairymen are competing with each other so to speak and under the present conditions there is not very much encouragement for one to endeavor to keep his farm and its live stock free from this disease when adjacent farms and their live stock are badly infected. Packers are urging the government to take some action in this matter, suggesting an idea of enacting a law requiring systematic tagging of all the animals on farms so that they could be identified at the packing centers and traced back to the farms from which they were originally shipped.

Dr. Burton Rogers, of Manhattan, Kan., estimates that about six per cent of the farms are furnishing all the tuberculosis, and the other 94 per cent are sharing the loss. I suppose, however, in the matter of the loss, the consumer bears his part also, not alone in the price he pays but from the fact that the product is not, perhaps, of as good quality, or as wholesome and safe, taking the view that in the consumption of such products he is in danger of becoming infected with tuberculosis. This aspect of the subject is inexhaustible and it is impossible to do more than merely mention a few of its more salient features. We might go on and consider tuberculosis in its relation to the dairy business and in all its branches.

Tuberculosis as it relates to the meat business, and you can hardly think of these occupations without realizing that this disease has a great bearing on them even at the present time, and without conjecturing what a vast bearing it is to have on them in the future, for, we in this country are just beginning to realize what a collosal proposition this matter of tuberculosis is becoming in its relation to society generally.

The subject of the suppression of this disease is a theme which is occupying the minds of dairymen, farmers, physicians, veterinarians and legislators very considerably in recent times, and they are finding it a most perplexing problem.

The disease is on the increase perceptibly among our farm animals. How can it be otherwise. Here is a highly contagious disease and little or nothing being done to prevent its spread. Some states have formulated laws looking to the suppression of the disease and the protection of the consumer of meats and milk, etc. The United States government is expending three million dollars annually in carrying out the provisions of the act of congress of June 30, 1906, with reference to meat inspection. Under this law I believe it is estimated that about 75 per cent of the meat consumed in this country is inspected, as well as all the meat that is exported. But, what about the other 25 per cent? Meat inspection was first inaugurated in this country not because we thought we should have it, but because certain foreign countries said that we must have it if we expected to sell them our meats. And the day will come when foreign countries will demand the same thing concerning our dairy products. And then, perhaps, some great system of inspection may be evolved which will embrace our entire domestic dairy business. But inspection of the products of dairies and meats will not prevent the spread of this disease, only indirectly as producers see that they are losing money by reason of condemnations, etc.

Legislation is a good thing, but I agree with Dr. Moore, of New York, when he says that you cannot legislate tuberculosis out of this country, or words to that effect. We hear much lately about the Bang method of eradication. Those who have thought most about the subject in this country do not seem to look with much favor on the Bang method of eradication. We can not deny, or refute, or gainsay, what Dr. Bang has actually accomplished in Denmark. But observation and experience shows that what may apply there cannot be called practical here. American farmers and Danish farmers are different and their farms are also quite different. I again agree with Dr. Moore that the suppression of this disease here is largely an individual proposition. Every owner of cattle must ascertain the condition of his cattle with reference to tuberculosis by the application of the tuberculin test in the hands of some intelligent and careful veterinarian and after discovering the disease once he must use his own judgment coupled with the advice of his veterinarian as to his proceedure. In some cases slaughtering all suspicious and reacting animals, in others complete isolation, disinfection, etc., and, of course, he must not again introduce it by buying infected animals, but demand a certificate of healthfulness, signed by some veterinary in whom he has implicit trust.

I have heard it asserted over and over again in this vicinity that you can not purchase tuberculin test cattle, that farmers who have cattle for sale reject the suggestion almost as an impertinence and refuse to sell to the purchaser who would have the audacity to ask such a condition. Perhaps there is some truth in these assertions, but when the demand is sufficiently urgent and a slight advance in the purchase price offered as an incentive some of these notions with reference to the tuberculin test will change. This requisite concerning the tuberculin test is growing and will soon be quite fashionable in every vicinity and when it is as popular as I expect to see it soon it will not be necessary to offer reward, so to speak, for it but the sale of a cow for dairy purposes will be next to impossible without it at any price.

I alluded to the fact that we could hardly expect to legislate tuberculosis out of our dairy herds. There has been considerable legislation along these lines, some, perhaps, that is unwise. And unless the individual cattle owners and dairymen take hold of this subject in dead earnest there will be more, for the consumer is going to demand protection. He certainly ought to have as much protection for his milk and rairy products, which are consumed in the raw state, as he demanded, and has very largely received, for his meats, which are usually well cooked before they are consumed.

We cannot spend time here to argue about its transmissibility from animal to animal, and from animal to man. We have not the time to discuss the identity of the disease in man and the lower animals. The giants have fought over these features of the disease and have brought in their verdict of guilty in every count.

At the recent congress on tuberculosis held in Washington, notwithstanding the attitude of the renowned Dr. Koch, the discoverer of the tubercular bacillus that congress of scientists put this German savant utterly to route and forced him to modify many of his cherished notions regarding the dangers of infection of human beings, particularly children, by the ingestion of the products of afflicted animals and furthermore unanimously adopted resolutions endorsing and approving every effort and every movement looking to the protection of mankind from infection from the consumption of food stuffs, meats and dairy products.

I remarked at the outset of this paper that tuberculosis was a somewhat burning subject. I still think it is. The world has begun a great campaign of education concerning it, children in the public schools in some of our cities are taking up the study of it, ministers, teachers, not to speak of physicians, veterinarians and scientists everywhere are devoting more and more time to the study of it and knowledge concerning it is spreading faster than its ravages. States and municipalities all over this broad land are enacting laws for human protection. The dairyman and farmer and live stock owner of every name, unless they awaken soon to their individual responsibility will be obliged to pay much more than their share in the losses that are bound to follow in the wake of this world-wide movement, which has already been inaugurated looking to complete extirpation and anhilation of this great white plague. I thank you.

CHAIRMAN: I am sure we have all enjoyed the Doctor's discussion. It is late, and we will stand adjourned until this evening.

THURSDAY EVENING, 7:45.

CHAIRMAN: The first on our program this evening is an address by G. L. McKay, of Chicago.

ADDRESS.

PROF. G. L. MC KAY, CHICAGO, ILL.

Mr. Chairman, Ladies and Gentlemen: It is needless for me to go through the formula of telling this audience that I am pleased to be present at a meeting of this kind. In coming to this magnificent state of Iowa, I feel that I am coming home. I am bound to this state by many ties I spent fifteen years of the best part of my life in connection with that great institution, the Iowa State College, and they were among the pleasantest years of my life. Very few people, I believe, realize the great work that institution is carrying on for the benefit of mankind. I say "mankind" because we are all dependent upon the soil for existence. We hear it sometimes said, "He is only a farmer." Why, we might truly say that the farmer is the axle of all creation. The prosperity and happiness of every nation depends largely upon the agricultural resources; therefore, the occupation of farming should be classed among the highest of the professions. The agricultural colleges and experiment stations, through their research work, are beacons of light for guiding farmers in the channels of success. As my friend Dr. Robertson has said, "Agriculture in its different phases, not only includes cultivation of the land, but the culture of the people who live on the land."

Wealth may be defined as anything that administers to the wants or happiness of man, and the ownership and possession of which may be transferred from one person to another. Its original sources are the sun, soil, air, water, plants, animals and labor. It is the task of the agriculturist to so manage these agents and agencies as to obtain the largest and best services for himself and fellow, from them. The outcome of true culture is the exercise of intelligent purpose in the activities of life; and that, in his occupation, stamps the farmer as the man of real culture. It is a false idea that culture is found only in idleness, amid luxurious surroundings.

Agriculture has many branches, and no particular branch deserves more fostering care than dairying, owing to the fact that dairying, in its adaptability for conserving the fertility of the soil, makes it possible for all other branches to flourish. Therefore, the man who gives intelligent care and attention to this line of agriculture is assured of success in all other branches. The amount of revenue derived from the production of butter does not materially diminish the revenue from other sources, but rather increases it, owing to the added fertility of the soil. Show me any section or any country where dairying is carried on extensively and I will show you a people *uniformly* proseperous and happy.

It is not my purpose to talk to you on the producer's side of the question, although it is the hub around which all other dairy questions revolve. Every person who manufactures butter, or sells the same, realizes that quality plays a very important part in fixing the price and regulating the consumption. While no doubt some improvement has been made during the last few years in quality, I think I am safe in saying that our butter is not, as a whole, in the same class as the butter that was made when we worked under the whole milk system, and yet it is surprising what a good grade of butter some of our large creameries make, under what might be termed perfect sanitary conditions, from the bulk of their cream, or that which grades number one. Every creamery, however, receives cream, from which it is impossible to make first-class butter, no matter what methods are employed. Some of this cream reminds me of what Mark Twain said about Naples. He said he had heard the term, "See Naples and die." He saw Naples and did not die, but he said the smell was awful. This is the kind of cream that all parties interested in the welfare of dairying should unite in condemning and refuse to accept under any consideration.

Not many years ago there was started in this state a system that was known as the Moody & Sharples system. This was the beginning of the hand separator system, or the skimming of cream by separators on the farm. Many of us opposed this method, as we feared a lowering of the quality would ultimately follow. Nevertheless, the system increased. Hand separator factories sprang up in various parts of the country. Right here in this city you have two or three factories. One of them is possibly the largest and best equipped factory in this country. Now, if we have this great demand for hand separators, there must be some reason for it, and when we investigate, we find that the hand separator system is based on economic principles, and to my mind there are three reasons why the sale of hand separators is increasing and cannot be stopped any more than the incoming of the tide.

Under the whole milk system it costs, I should say, about 12 cents per hundred to deliver the milk, or about 3 cents per pound to deliver the butter fat. Under the hand separator system it costs about 1½ cents per pound to deliver butter fat, if delivered daily. If delivered every other day, the cost of course would be much less. In connection with this, the value of the skimmed milk for feeding purposes is increased at least one-third, owing to the fact that it is skimmed while warm and is in the best possible condition for young stock. The third reason is a very important one at the present time. A man who has a hand separator and who skims his own milk is not in danger of transmitting tuberculosis to his stock from other herds. While this system must increase on account of the reasons given, it must also be regulated so as to meet the demands for quality.

There is nothing about a hand separator that will injure cream, if the ordinary precautions in cleanliness and regulating of temperature are observed. There is no good reason why cream cannot be delivered every other day in good enough condition to make the highest possible grade of butter. This system has enabled farmers in all parts of the country to take up dairying, whether there was sufficient milk in this neighborhood to warrant the erection of a creamery or not. So, today we have local buyers and cream shipping in practically all states where dairying is carried on, especially in the central west.

At the present time, the merchant buyers of cream are the greatest menace to quality with which we have to contend. Before we progress much in quality, this practice of buying cream in stores will have to be done away with. It is unreasonable to expect a merchant, who has a business of his own, to give proper attention to another branch of business with which he is unfamiliar, especially with such a perishable product as cream; so the result has been disastrous to quality, as might have been expected. The farmer is not going to cool and care for his cream as he should when he sees the unsanitary methods by which the cream is handled by the merchant, where practically no attention is given to controlling the temperature of cream and to keeping the surroundings sanitary. If cream is properly cooled and cared for, it can be shipped quite a distance with practically no injury to quality. When we used to make butter under the whole milk system it was quite a common thing with many creamerymen to separate the cream Saturday morning and cool it down to a low temperature and churn it Monday morning with the best possible results.

The question of improving the quality of cream has engaged the attention of the dairy press and dairy experts for the last few years, and among the latest suggestions we find federal inspection of creameries. This, of course, would mean a federal law to control the interstate traffic in butter and cream, and such a law would have to be enacted by congress. Personally, I am in favor of most anything that would aid in improving the quality of our cream and thus raising the standard of American butter, so any practical plans that my friend Chief Webster may formulate in regard to government inspection will certainly receive due consideration from me and from our association.

When it comes to the government having *entire* supervision of the dairy business, I am a good deal like the Irishman. You know Irishmen are all politicians. Pat was shipwrecked and after clinging to a mast for nearly two days, was washed ashore on a little island. One of the natives saw him and came to his rescue. About the first thing Pat asked was, "Have you got a government here?" When the native answered in the affirmative, Pat rejoined, "Be gorra, I am against the government." Now, I am against the government's taking entire control of the dairy business of the country. If the object in appointing inspectors is to prevent the spread of disease by dairy products, an army of trained bacteriologists would be necessary. Even a microscopical inspection of the cream would not be sufficient. It would be much easier to find a needle in a haystack than to find certain specific germs in cream with a microscopical examination alone. Every creameryman that has a knowledge of his business understands the grading and caring for cream now. It seems to me like the old question of trying to purify a stream by working at the lower end when the source of contamination is at the head. Cream at the farm may be kept under very unsanitary conditions and may contain germs that possibly may be injurious to health and yet might pass a microscopical examination all right. We had a typhoid epidemic at Ames some years ago that resulted disastrously to a number of our students. Upon close investigation, it was found to come from contaminated milk, due to the use of water in cleansing cans, from a well infected by sewerage; yet the milk, under an ordinary microscopical examination, would pass muster any place.

We are told in Bulletin No. 127, put out by the Department of Agriculture, that the tuberculosis germ will live at least three months in butter and be in a vigorous condition. It has been a common belief among many of our scientists that the tuberculosis germ would not live long in butter, but it seems from experiments reported in Bulletin No. 127 that this is not the case, and I have no reason to doubt the reliability of these experiments. Whether they are reliable or not, there is a strong sentiment being worked up in the country on the danger of tuberculosis being transmitted from dairy products to the human family; therefore, dairymen should take necessary precautions to protect their own business. Even the oleomargarine people are advertising their vile products as being sanitary and germ free, due to special precaution in pasteurization. Everybody who knows anything about their business knows where the cheaper fat from all animals goes, whether diseased or not. It is a generally accepted theory that the milk from a cow can only be contaminater when the udder is diseased or affected, and there are very few cows in the country that have diseased udders. Nevertheless, I believe that all states should pass laws making compulsory the paseturization of all dairy products. If it is true that the bovine tubercle bacilli are transmittable to the human, and many of our scientists think they are, then pasteurization of all dairy products should certainly be made compulsory by law. Dr. Koch still maintains that bovine tubercle bacilli are not trasmittable to the human, and notwithstanding all the agitation to the contrary, no positive proof has been brought forth to show that they are.

I am a firm believer in pasteurization. I think the future will no doubt see laws passed that will make it compulsory to pasteurize all dairy products, and that water used for home consumption from lakes, streams and shallow wells shall also be subject to a heating process sufficient to kill disease germs. I think there is more danger from the latter than from milk.

While pasteurization is a good thing for checking or preventing the spread of disease, it is not a panacea for removing all the old undesirable flavors from stale, overripe cream, and we must all admit that we have such cream. So the question naturally arises—What are we going to do about it? The passing of drastic laws that would seriously interfere with the rights of farmers should be out of the question. I would per sonally like to see our dairy laws amended so as to have our farmers keep their separators in sanitary places; to have separators washed each time they are used; to have cream cooled down as soon as separated to well water temperature or at least to 60 degrees F., and kept at this temperature until delivered to the buyer, and that cream should not be over three days old when delivered. I would make it compulsory for buyers of cream to have a sanitary room in which to keep the cream at a temperature not to exceed 60 degrees, until it was shipped. Such laws would practically take the buying of cream out of the hands of the merchants. Laws of this kind would not greatly inconvenience the farmer, as most every farmer has lots of water and the majority of them have windmills. Take the little shotgun cans that we used with the Cooly system, which was one of the best systems for caring for cream that we ever had, and immerse these cans in a little tank of water where the water may run from it to the big tank, and you will have an ideal place for keeping cream. The cream should not be placed in the large cans until the day of shipment. I am satisfied that under these conditions, cream could be kept two or three days in most any kind of weather and be delivered in good condition.

If I owned a dairy farm, I would certainly have a gasoline engine for operating my separator. I would have a milk house near enough to my residence so it would be convenient to have an abundant supply of hot water for cleansing the separator and all dairy utensils. I would have a well in the milk house and operate the pump with a gasoline engine, and also have my tank of cold water for caring for my cream. Some of you may think this would be a great expense, but I maintain that it would be a question of economy. I have a friend, Mr. Rockwell, of Belle Plaine, Iowa, who has a one and one-half horse power Fairbanks gasoline engine that cost him, I believe, $140 (and I presume it is unnecessary for me to say that I have no interest in any make of gasoline engines). This engine has been in constant use for six or seven years, with practically no expense. They have a herd of 20 Jersey cows and it costs him, on an average, 55 cents per month for skimming the milk twice a day from that herd of 20 cows, a little less than one cent each skimming. No man could skim that milk by hand for that price, if he put any value on his time. Outside of the question of labor, you will get a more exhaustive skimming, as the separator is run at a uniform speed. In connection with this, if the inflow of milk is kept the same, you get cream of about the same density from day to day, thus avoiding the annoyance of variation of tests, which is one of our most common complaints.

(Mr. Rockwell's Letter.)

"Prof. G. L. McKay,
Chicago, Ill.

Dear Professor: In regard to the cost of running our No. 5 U. S. cream separator would say: For running separator alone, it takes five gallons of gasoline a month at 11 cents per gallon, separating the milk from 20 cows; power 1½ horse. When we run the churn and washing machine it takes from eight to ten gallons per month. We have sawed wood, shelled corn and always run the grind stone when needed. The cost of the engine is $140 with electric sparker, which is the cheapest way of running a small engine, doing away with electric batteries altogether, as the engine will start from the sparker. If I can be of any more help to you, call upon me.

Yours very truly,
CHAS. H. ROCKWELL."

Now, I have tested skimmed milk caught from the separator as it is separated on the farm under ordinary conditions, and I have found in some cases the fat in the skimmed milk to actually read over one per cent. It would not take a man very long who was doing this kind of work and who owned a large herd, to waste enough to purchase a gasoline engine.

The question may be asked, "Would the large creameries stand for the changes I have advocated in the laws?" I cannot speak for all centralized plants, as they are not all members of the American Association of Creamery Butter Manufacturers. I can say for the majority of the members of our association that they are heartily in favor of any laws or anything else that will aid in raising the standard of the American butter. It is the purpose of one of our leading members to put in sanitary stations, as I have described, at all points where they take in cream; to put competent men that have a knowledge of the business in charge of these stations. In addition to this, it is the purpose of the said company to place in the field two or three men, who have an expert knowledge of the side of production. It will be the duty of these men to furnish information to patrons through the station men and to hold meetings for the discussion of questions that will be of interest to the producers. It will be the duty of these men also to organize and encourage test associations among their patrons for weeding out the undesirable cows. This work at the head of the stream I believe will have the effect of purifying the whole stream, or of improving the conditions all along the line. Drastic laws can be passed in any state, but they cannot be enforced unless they are backed up by a strong sentiment in their favor.

With all our boasted intelligence, we are losing annually in Iowa alone $15,000,000, as compared with the results in some of the European countries, where the soil and climatic conditions are not the equal of ours for dairying.

These are serious problems and are worthy the consideration of our legislators. An effort is being made at the coming session of the legislature in Iowa to get an appropriation to be used for educational purposes along dairy lines. Every man who is interested in dairying, especially every creameryman, should appoint himself a committee of one to do all he can to aid this bill. The average butter production per cow in the state is, I believe, something less than 140 pounds, while the average production in some of the European countries is some 260 odd pounds. With something like 1,250,000 cows producing milk in this state, and taking the difference in production, as compared with the European cows, the figures are appalling. Now, we do not need to go to Europe in order to make a comparison of this kind, as we have many herds in this and adjoiniig states that are producing over three hundred pounds per cow. If it is possible for one man to bring his herd up to an average of three hundred pounds, it is possible for another to do the same.

What we need is a more thorough organization of the dairymen of the country, so as to bring about the use of more intelligent dairy methods, not only for increased production but for better sanitary methods for caring for milk and cream. We need more harmony among the different organizations interested in the manufacture of butter. Parties that try to divide the dairy interests and set one faction against the other are not working for the benefit of the dairy interests of the country, but rather for their own personal gain. That old Bibilical saying that "A house divided against itself cannot stand" is as true today as it was at the time it was uttered.

Every system of creamery operation has possiby some defects, which should be remedied as soon as seen. The business that is established on economic principles and on an honest basis will prosper, while that built upon fraud and trickery may flourish for a time but eventually it will fail. Farmers today rank in intelligence and business instincts with most any other class, and they are certainly the best judges concerning the disposal of their products, and are going to sell their goods where they can get the greatest returns, regardless of the system used. We have co-operative creameries, individual creameries and so-called centralized creameries, and I presume we will always have them so as to meet the demands of varying conditions.

This association meets every year and goes through about the same routine of business each time. A legislative committee is usually appointed composed of three or five members whose business it is to solicit aid from the legislature for educational purposes or for advancing the dairy interests of the state. The members of this committee are supposed to pay their own expenses for the honor of being on the committee. After a good deal of correspondence, some one is found who will assume the responsibility and burden of introducing a bill for the said appropriation. Then after a little delay, the committee is informed that they can meet with the House committee or the Senate committee, but that their speeches must be brief and not exceed five minutes in duration. In fact, that august body tries to give you the impression that they are conferring a great favor upon you by granting you this privilege. The last time I attended such a meeting, while one of our principal speakers was addressing the Senate committee, a senator, who was chairman of the Senate Appropriation Committee, deliberately turned his back and walked away to one of the windows and viewed the landscape around the capitol. It is needless for me to say that the committee seeking aid from such a body of men is made to feel that the organization they represent is unworthy of consideration.

These representatives are only servants of the people. The reason why an organization which represents one of the greatest industries in the country, is snubbed year after year in this state is due to the fact that the dairymen are not organized. The dairymen of this state have never been recognized as they should be. The dairy business is looked upon as a cross-road affair, and yet the industry represents at least $50,000,000 annually.

The first thing necessary, in my judgment, to carry on an organization of any kind, politically or otherwise, is money. You have in this state, I believe, about six hundred creameries. If an intelligent appeal were made to these creamerymen, even to the buttermakers, I am satisfied they would contribute at least $5.00 apiece toward forming a permanent organization with headquarters, say at Des Moines. This would give you a fund from creameries alone of at least $3,000.00 per year. Then, our good friends, the manufacturers of dairy machinery and the sellers of dairy supplies would, I am sure, add their quota to the same. I own a half interest in a creamery in this state and will at any time contribute at least $15.00 per year. With such an endowed organization, you can carry on a campaign of dairy education that will reach the people and command respect. If you reach the people, they will see that they are justly represented. If you want any delegates to go to Des Moines, you will be in a position then to pay their expenses. In such an organization, everyone interested in dairying of any kind should be represented. This would also include breeders of the various kind of dairy stock. Such an association seems to me to be practical and is worthy of consideration.

I am satisfied that if five or six men were placed in the field in this state, who were competent to give instruction on the production side, including feeding, breeding and formation of test associations to weed out poor cows, that the revenues of this state would at least be increased within a period of five years, $1,000,000 annually, without increasing the number of cows in the state.

Mr. Shilling will, I hope, excuse me for trespassing on his territory. I do not know of anyone better qualified for heading such an organization than Mr. Shilling. If an appropriation is secured for placing men in the field, and the prospects seem good, I would have these men placed under the direction of this association, working in co-operation with the extension department and dairy department of the Iowa State College, thus keeping the appointments free from politics. I thank you.

CHAIRMAN: The next is an address by E. R. Shoemaker, editor of The Creamery Journal, on the subject, "Iowa Needs an Advertising Man."

IOWA NEEDS AN ADVERTISING MAN.

E. R. SHOEMAKER, WATERLOO, IOWA.

I am not here to tell you what a grand and glorious state old Iowa is. I am not here to tell you that no other state produces the hogs, or poultry or eggs or hay or oats or cattle that Iowa does. I am not here to glory with you in that only one state beats Iowa in the value of her corn, her horses, her mules, her dairy cows and her butter. These are facts every Iowan should know and of which we should all be proud. To discuss them would be interesting and profitable. But, instead of rejoicing with you tonight in the greatness of this state, I will ask, and try to answer, the question: "What's the matter with Iowa?"

Iowa is good enough for us all. But, while we are basking in the sunshine of her prosperity, while her land values are increasing year by year; while we are marketing millions of dollars of her products each season; while we are building bigger barns to keep more stock to eat the great crops that Iowa grows, let us not forget that there is a difference between $20 and $100 land, and that the kind of farming that pays big dividends on one will not do so on the other.

I am not here to sympathize with the poor Iowa farmer, who has no place to live but in a nice, big house surrounded by nice, green lawns and nice, big barns nothing to eat except everything heart could wish; no way to talk to his neighbors except by telephone; no way to get his mail except by daily rural free delivery; no way to go to town except in his rubber-tired buggy, his automobile or the electric car that he flags in his own back yard; no way to pay his bills except by checking on his bank account; no way to avoid becoming a millionaire except by dying or giving his property away. I am not here, I say, to shed tears with him—I have troubles of my own—but I want to remind every Iowa farmer, every Iowa business man, every Iowa citizen, that, no matter how easy the triumphal business march has so far been, Iowa must look to the future.

The question is not how great and prosperous are we today, but how great and prosperous will we be twenty-five years from now?

Most any kind of a farmer can herd enough cattle on $5.00 land to pay big dividends. Most any kind of a farmer can make money raising grain on $10.00 land. Most any kind of a farmer could soon pay for $20.00 Iowa land growing corn. A reasonably intelligent farmer can make money fattening cattle on $50.00 Iowa land. But when Iowa farms are selling for $100.00 to $150.00 an acre the fellow who starts out to pay dividends on that investment is up against a different proposition.

Iowa will always be known as a great corn state and live stock state and dairy state, but she is to become better known as a dairy state for the simple reason that therein lies her own salvation. Iowa must economize. She must turn from extensive to intensive farming. She must grow crops in fence corners and vacant fields where now she is growing weeds. No state on earth but Iowa could afford to waste, absolutely waste, $40,000,000 worth of cornstalks every year. And Iowa can't afford it any longer. No state on earth, but Iowa, could afford to be milking cows that produce less than 150 pounds of butter-fat a year. And Iowa can't afford it any longer.

Her future prosperity will be worked out by smaller farms and better farming; by more and better dairy cows; by more silos and fewer corn cribs; by more clover and alfalfa and less timothy hay.

In short, Iowa is going into the dairy business heart and soul, and she's going into it from purely business motives, because it means more money to her than any other method of farming; because the market for dairy products is constant and never satisfied, and because the man who dairies intelligently makes his money and leaves his land richer than he found it.

This dairy wave is on the way. In fact, it is already here. It wasn't many years ago that our worthy president and others breeding dairy cattle were the laughing stock of their neighbors. Often they did not raise their male calves because nobody would buy them. Today you are lucky if you can find for sale by an Iowa breeder of dairy cattle a male calf fit for service, and I know some who have already sold calves that haven't been born.

Five years ago Kimball's Dairy Farmer was started. Inquiries for dairy cattle then were few and far between. But now I could show you dozens of letters every week from subscribers asking where they can buy dairy cattle of this breed or that breed. Hundreds of Iowa farmers in the past two years have purchased pure bred sires and are now breeding up dairy herds that you will hear from later on.

So much for the dairy cattle end of the business.

Two years ago there were in Blackhawk county, if my census is correct, two, or possible three, silos. Tonight there are close to seventy-five. I could take you out and show you twenty-five in a single township. Seventy-five silos aren't a drop in the bucket compared with the number there should be and eventually will be in Black Hawk county, but this rapid increase shows that our farmers are seeking economy in feed and adopting methods that will bring the biggest returns. I mention my home county because I am more familiar with it, but the same thing is going on all over this state, and the time is rapidly nearing when the silo will be as common as the corn crib in Iowa.

I want to give you all fair warning. This dairy spirit is catching. It's spreading and will continue to spread all over this state. The little fires of enthusiasm that have been kindled here and there by the persistent, faithful pioneer friends of dairying—especially if fanned by the gentle breeze of a state appropriation—will burst into flames that by way of the dairy cow will sweep the whole state with an era of prosperity such as she has never known.

I grant you that Iowa to-day is twenty years behind where she should be as a dairy section, and, yet, Iowa has done remarkably well to have achieved so much without a single dollar's help from the state.

It is gratifying to be able to say that Iowa has 1,500,000 dairy cows. But it is not so gratifying to be compelled also to say that the average production of these cows is only about 140 pounds of butter fat per year. In Europe dairy cows average 300 pounds per year. In Iowa and other western states there are scattered herds doing as well, but the cows of our neighboring states will average twenty to thirty pounds better than ours. It is an actual fact that Iowa dairymen are losing every year $20,000,000 to $30,000,000 because of poor cows and poor methods.

That's the one big thing that's ailing Iowa. And until it's corrected, until farmers are led to see the loss in keeping poor cows; till they are shown methods of dinging out which are the poor cows and helped to put these methods into practice; till the cow that gives the butter-fat supplants the cow that doesn't—I care not what the breed may be—Iowa is not going to prosper as she should.

To do this will take money. The loyal friends of dairying in Iowa have for thirty years put their shoulders to the wheel and their hands into their pocketbooks and gladly and generously contributed the money that has given dairying a start. It is now the duty of this state to see that this, the most neglected industry in Iowa, is given such support as shall make up for past neglect. A liberal appropriation for carrying this educational work to all corners of the state will prove the best investment Iowa can make, and go a long ways toward putting us at the head of the dairy states, where we properly belong.

But there's something else that's wrong with Iowa.

For ten years her farm population has been steadily decreasing. We have been contributing our thousands to the upbuilding of other sections while we have failed to attract many to us. This is serious.

We are a good deal like a merchant I one time knew. I was employed on a country newspaper. My official title was foreman. The force consisted of a 16-year old girl who was there two days a week, a boy who helped on Thursday nights and Saturdays and myself. My duties were to set all the type I could, write all the local news I could and get all the advertising I could. One day I called on the proprietor of quite the largest store in town. (They called it the "Bee Hive.") He wasn't advertising. I explained who I was and started in to give him a talk on our immense circulation and to say that if he would let me write his ads and print them in our paper there'd be so much business coming his way that he'd have to rent the next building in a week or two, but he rather rudely interrupted me by saying: "Young man, I've been in business here for twenty years. I built the first store in this town. I've got the biggest store here today, I know every family in this county and everybody trades with me. What do I want to advertise for?" I was considerably squelched so sneaked out as quietly as I could. The next week a young fellow came to town and opened the same kind of store right across the street. He jumped in with a page ad and kept on pounding away with page and half-page ads. In six months the once busy man at the Bee Hive was looking rather worried; in a year he had mighty little trade left, and in eighteen months he sold the remains of his run down stock for what he could get and went back east to live with his wife's relation.

Iowa may well take a lesson from him. We have too long been folding our arms, looking complacently out over the fields of plenty and congratulating ourselves that everybody knows all about Iowa.

And while we sit still in supreme satisfaction, the states to the north, the states to the south, and those on the east and west are reaching in and silently snatching out thousands of citizens who imagine they see the land of promise elsewhere than in Iowa, and thousands more pass us by on their way to the untried but well advertised west.

Is there a better state in all these United States than Iowa? Are there better opportunities anywhere in agriculural, mercantile or manufacturing lines than right here in Iowa? Is there a better dairy section on earth than right here in Iowa? Are there better people, better churches, better schools anywhere than right here in Iowa?

Then why not tell the world about it.

Iowa needs to advertise her resources and her opportunities. She needs to advertise, first, to open the eyes of her home people and keep them here, and second, to attract outsiders to her.

If Kansas today would pay the debt she owes her advertising man, Secretary F. D. Coburn, he would be as rich as Croesus. If it hadn't been for Coburn the winds and drouths and grasshoppers would be all we would know of Kansas. Every time somebody raised a big hog in Kansas Coburn told about it. Every time somebody raised a big crop of grain Coburn told about it. Every time the hens laid well or the turkeys were numerous, Coburn told about it. Every time they cut alafalfa Coburn told about it. And he told it well. His pen has been working night and day in the one great cause of telling the folks about Kansas till that state is known the country over. Coburn has brought thousands of settlers to Kansas and kept thousands more from moving away. He's worth more to Kansas than any other official she has.

And look at Minnesota. They figure that state can support 30,000,000 people. They've got one-tenth that many and are now out after the rest. Last year they spent just a little money advertising land and business opportunities. The state immigration bureau was swamped with 60,000 inquiries from homeseekers and investors. This has opened their eyes and the commercial clubs of the state are working together for an appropriation of $100,000 a year to advertise Minnesota. And it will be the best investment Minnesota can possible make.

Speed the day when Iowa shall begin to advertise; when we shall keep at home those who should stay and bring into the state the thousands for whom fortunes are waiting here.

When Iowa's advertising man gets to work in earnest, when dairying and intensive farming become general throughout the state, our farm population will increase, our bank deposits grow, our factories thrive and all Iowa virtually flow with milk and honey. I thank you.

PRESIDENT: We will next hear from the committee on resolutions. Mr. Wright is chairman.

MR. WRIGHT: As chairman of the resolution committee, I have the following to orer:

Resolved, That the Iowa State Dairy Association express its high appreciation of the welcome given this convention by the Waterloo Commercial Club, the mayor and the citizens, as well as the daily press of the city. That the success of this convention has been greater because of the delightful music furnished by Jules Lumbard, E. C. Lytton, E. T. Sadler and their accompanists. That the thanks of this association are given to the friends of the association who contributed to the funds, and to the Northey Manufacturing Company for the use of their butter room.

We recommend that the state legislature make an appropriation of not less than $10,000 a year for use of the Iowa State Dairy Association, said funds to be expended for the holding of short courses in dairying throughout the state and in the conduct of educational meetings and campaigns among the farmers for the purpose of teaching scientific methods in dairying, feeding, breeding and the care of dairy products on the farm looking toward increasing the butter-fat product of Iowa cows, the keeping of better cows, the adoption of better methods and an increase of profits from dairying to the farmers in this state.

We believe that a bill should be passed by the Thirty-third General Assembly of Iowa, authorizing an appropriation by the state to provide for a fair and reasonable compensation to the owners of cattle slaughtered, after having been tested and condemned as being infected with tuberculosis.

Be it further Resolved, That this association petition the Thirty-third General Assembly to enact a law prohibiting discriminations in prices paid for milk, cream or butter-fat by any creamery in this state.

We, the dairy and creamery men of Iowa, respectfully ask our members of Congress that the duties on dairy and farm products be maintained; that a copy of these resolutions be forwarded to our representatives and senators in Congress.

The resolutions as read were unanimously approved and accepted.

PRESIDENT: We will now listen to S. B. Shilling, of Chicago.

ADDRESS.

BY S. B. SHILLING, OF CHICAGO.

It is getting late so I am going to have some feeling for you and not afflict anything upon you any more than I can help. But there are one or two things that I want to dwell on for a short length of time, and the first of these is because it is uppermost in my mind and the minds of those who live in Chicago, and it undoubtedly has been brought to your attention in a way that has caused you to do considerable serious thinking if you are aware of this fact (I say this in consideration for the Chicago market in all I am saying) that there goes into force the first day of January a new ordinance which says this: That after January 1st no milk or its products shall be sold in the city unless from tuberculin tested cows or from pasteurized milk. Now this ordinance has been passed by the Chicago city council, but I want to say to you that are shipping to that market or contemplating doing so, that you stand in no danger whatever. It was my privilege last week to go before Mayor Busse with a committee to learn their attitude in regard to the matter. Now they are not going to place the Chicago market in a position where they do not dare receive a pound of butter, because there is not a creamery, that I know of, that could comply with those requirements, either from tuberculin tested cows or from pasteurized milk and cream. I have to bring this to you to show you the trend of events. It has been told to you several times that we have got to give the consuming public a guaranteed product. It is going to be up to you now in a short time to furnish a guaranteed healthful product to the consumers of this country, and you boys and buttermakers have got to put in pasteurizers. It is only a question of time before other markets will follow in the footsteps of Chicago. It don't do for us to oppose an ordinance of this kind. The Chicago commission mechants are not opposing it. An ordinance of this kind is good as far as it goes, but we say this that we won't stand for any prohibitive or drastic action upon it. They said, "you need have no fear that any action will be taken by the board of health or by Dr. Evans that will cause the loss of a single dollar to anyone. They assured us, however, that this would be enforced gradually and you are going to have every opportunity to comply with it, and while I am not authorized to stand before you I know that I voice the sentiment of every commission man in the city of Chicago when I say that they will stand by every shipper and they won't stand by and see him lose money because of that ordinance going into effect. But boys, I want to impress upon you the fact that we must go to the consuming public with a guaranteed product, a pure product and a healthful one. It is not for us to stand back and ask whether this is a fact or not, whether it is possible to transmit tuberculosis. We dare not stand up to it. What we have to do is to comply with the consumers' demand and it is going to be up to us, and the sooner we get there and the sooner we come to their conditions the sooner we will cease to hear such talk as we have heard here today and truths told about the conditions of our butter traffic, and of the raw material and the less talk of that character we have go into print the more popular will our product become. It is simply a business proposition and I want to impress upon you that you have got to furnish a guaranteed product.

I believe I was to talk on organization and I am only going to dwell on it for just a few minutes. First I will call to your attention some of the things accomplished by the National Dairy Union last year. I want to tell you just one instance that came before me this year. I went before the Secretary of Agriculture in an argument for the dairy industry against the oleo manufacturers. The first question asked was, "Who are you, who do you represent, and what is your membership?" It all seemed to depend upon that one thing. As you know, it didn't take the Secretary of Agriculture very long to decide in favor of the dairy industry. And before I left, he said, "I am glad to know that you dairymen are keeping track of this thing."

Another thing, we have been instrumental in the election of governor of Illinois. His opponent was being heavily backed by the oleo people. I am not flattering myself, but I have it from the chairman of the Republican committee that it was the help of the National Dairy Union that placed Mr. Deneen in the governor's chair. Later Mr. Deneen said, "When the dairymen want a new commissioner appointed tell me who you want. We never have had as good a condition in the Chicago market as we have at the present time." Mr. Shucknecht has succeeded in doing more than has ever been done before in closing the illegal sale of oleomargarine in the city of Chicago.

St. Louis is the worst hotbed of oleo in the United States. There are perhaps two or three carload sold there every week. I formed an association among the butter dealers there and raised nearly $500 to fight the illegal sale of the butter substitute. The National Dairy Union furnished some of the money for taking the matter to the state legislature, and as you know Mr. Washburn resigned and left the city. They got after him so hard that it was absolutely impossible for him to remain.

I just want to mention one more market before I close, and that is Denver. That, also, is one of the worst places for oleo in the country. So far as our association is concerned we have reduced our expenses to the very lowest possible point. There isn't an officer drawing a single dollar for salary. We felt it was a burden and we want a larger membership. We are up against this situation. The National Retail Grocers' Association has come out and endorsed a strong resolution favoring the repeal of the oleo law. The Butchers' Association have done the same thing and we have to meet them. They have elected two representatives in Missouri, both pledged to the oleo cause, and we must have your support again this winter. I thank you.

FRIDAY MORNING, 10:00 O'CLOCK.

PRESIDENT: On account of some of the commission men going away at 2 o'clock it has been decided to sell the butter at 12 o'clock or soon after the close of this meeting. We will now listen to an address by L. H. Paul, on "The Silo."

THE SILO.

L. H. PAUL, ANAMOSA, IOWA.

Your committee has asked me to give a talk at this meeting on the question of cheaper production of dairy products from the viewpoint of the man who raises the feed, milks the cows and cleans out the barns. There seems to be something wrong with this part of the dairy business. A large number of men have told me during the past year that their cows did not bring them enough to pay for the feed they ate. At the same time consumers of dairy products all along the line complain of the high prices of the same. Now, these two complaints are so common that we are led to believe that both are right and if this is so there must be something wrong. Either it is costing the farmer too much to produce the milk or the plan of manufacturing and delivering is to expensive, making the finished product too high to the consumer, and I take it that the object of a meeting like this is to get the producer of raw material and the manufacturer together and if possible learn some plan by which the costly features may be eliminated and better methods introduced so that every one from the producer to the consumer may get just compensation for the labor done and the manufactured products still be produced at a price that the consumer can afford to pay. Our opinion is that the solution of this question of cheaper production lies almost entirely with the man who keeps the cows. We have long rows of figures on the value of our dairy products for the county, state and nation. We have it figured for us that one-third of the cows of Iowa are kept at an actual loss; that another third just plays even and that all the profits made must be made by this last one-third of all the cows. Still I doubt if there is a farmer in Iowa who knows what it costs to produce a pound of butter on his own farm. Small neglects make large failures. All the great manufacturers of the country put in all their days and some of them a large part of their nights studying how to cheapen the cost of their product.

While this is a question to which we farmers have given very little thought, many of us have plowed the same old fields and harvested the same old crops that our fathers did; we feed and milk the same kind of cows in the same old way. Some of our fathers started life with nothing and held their own through all the changing years and some of us have done as well, but on some farms we are pleased to note that the highway cow and the long horned steer have passed away. The thunder does not sour the milk any more, and cows have quit dying with hollow horn and wolf in the tail. As the world becomes more thickly settled, the struggle for existence becomes harder; the farmers of the world are driven into the dairy business. The fact that meetings like this are becoming so popular shows that we are not satisfied with the results we are getting from our so-called "high priced land." We are all working for better results; we want better results that we may buy more of the necessaries and comforts and luxuries of life for ourselves and our families; that we may better care for and educate and cultivate that most valuable of all crops grown on our farms today, that is, our crop of boys and girls. This is the most valuable of all crops grown and we are sorry to say in many cases is the worst neglected. In some childish natures the seeds of discord and discontent are so deeply rooted that it takes years of careful cultivation to kill them or cover them up so deeply that they will be entirely smothered out. Times have changed since our forefathers roamed over these broad plains hunting deer with their rifles on their arms and powder in their flasks; the girls hunt dears today with nothing on their arms and powder on their faces. We are living in what we are pleased to call a fast age. We once had a quotation, "Early to bed and early to rise." An Irishman said, "We quote it differently nowadays. Now it is 'Early to bed and early to rise; hustle like hell and advertise.'" Changed conditions demand different methods. Better results can only be obtained by adopting and pursuing better methods. Better methods mean more care, better preparation of the soil, better selection of our cows, better care of our breeding stock, better care of our growing crops, better care of our crops at harvesting time, a little closer attention to our business in every line.

The farmer can hardly change the selling price of farm products, so in order to enhance his own profits he must get his head into the game and produce his goods cheaper. The man who reduces the cost of the necessaries of life is a world's benefactor. We are often told that the way to get better results from a dairy herd is to get scales and a test machine and weigh and test the milk from each individual cow and weed out those that are not making a profit. In our opinion this is commencing at the bottom of a hole to dig. First, feed and treat the cows right that you have on your farms. Provide a cheap succulent feed. When you commence feeding and treating your cows right, then get your scales and test machine and you will be surprised at how few cows you have that will not pay for their feed. There is a theory taught at nearly all of our agricultural schools that any animal on the farm should be fed a full feed, or all that it will eat, at all times. This is all right in theory, but if your feed costs too much it is likely to be a money losing game when put into practice. If you get your feed cheap enough, most any kind of an animal can be kept at a profit, so on Iowa farms with land at the present prices, both the production of milk and beef depends almost entirely on the cost of feed. It is said that if a public speaker wishes to interest his audience he must tell them things they already know. In doing so they will recognize the greatness of his mind from the fact that he knows the same things that they know. I suppose on the theory that all great minds think along the same lines. My theory is that if you want to do a man some good you must tell him things he doesn't know. Naturally, when a man hears a thing that he doesn't know himself he doesn't believe it, so if I can say something to you today that will cause you to investigate this matter of cheaper production for the express purpose of proving that I am mistaken you will then begin to learn something. On our farm at home the silo has almost entirely solved the question of cheap feed. Men often say to me: "If a silo is as good a thing as you say it is how does it come we don't all have them?" The silo never was as good a thing as I say it is until within the last few years; that is, since we have learned to let a corn crop get ripe, not ripe like a dried apple, but ripe like a ripe apple, before we put in into the silo. Both stock and ears must be well matured. Our plan of rotation is from corn to pasture. During the past five years we have used but very little hay. The old method of feeding corn and hay for producing milk is certainly very expensive with corn at the present prices. The only reason your cows do not starve to death on timothy hay is because the winter is not long enough. When any healthy animal is getting lighter in weight, it is pretty good evidence that it does not have enough of nutritious feed. Ten acres of corn in a silo will furnish more feed and better feed than fifty acres of timothy hay. Corn silage for the bulky and succulent feed and alfalfa or clover hay for the protein feed will make an almost perfectly balanced ration and one upon which cows will give a full flow of milk and keep in good condition. We are often asked if we limit the amount of silage we feed our cows. My answer is, "We do limit them to what they will eat." We have known herds of cows to stay in good flesh and give good flow of milk through the entire winter where corn silage was their entire feed with no other grain or rough feed. Farmers take to new ideas about like they take castor oil; that is, well mixed with preserves. If you will spread preserves on thick enough we are willing to take almost any kind of a dose, but to get out of the old rut takes a long, hard pull. In our opinion the question of cheaper production will be solved on most farms when we learn to grow all the corn we can grow on all the good corn land we have, and put enough of it in silo in the fall to winter all the stock on the farm. We have all been reading silo literature for many years; ; we have read just how thick to plant the corn and no two writers agree on the question. We have read of how to cultivate the corn, and no two cultivate alike. We have read just when to cut the corn and very few agree. In reading these small technicalities, we are liable to lose sight of the main question, which is the one question on which all writers and feeders of ensilage feed agree; that is, grow all the corn you can on all the corn land you have, according to your best methods, and put enough of it in the silo to winter your stock.

We are satisfied from our own observation and personal experience that alfalfa will some day be grown in Iowa on a commercial basis, as it seems to grow very readily on any land which is well drained. We have it growing on our farm at Anamosa on top of a clay hill on the poorest land on the farm. Still it is hardly worth while for the Iowa farmer and dairyman to experiment with alfalfa until he learns to grow clover. There are 205,000 farms in Iowa. Statistics show that there is an average of one acre of clover on each farm, so until we learn to grow lots more clover than we are growing at present it is hardly worth while to experiment with alfalfa.

Few men realize the actual food value of an acre of our Iowa corn when it stands in the field fully matured, when the ear is ripe and when the shell and pith of the stock is filled with digestible and nutritious moisture, if it is put into a silo and kept in that condition for winter feed. By its use the cost of producing milk can be reduced one-third and we are producing beef on two-year old steers today for less than five cents per pound and it is costing some of our neighbors, feeding corn the old way, close to ten cents per pound. Some men are afraid of the silo because they have read that corn ensilage is not a balanced ration and I don't think they know any more about a balanced ration than I do, and I don't know anything about it at all; and our observation is that more cows suffer from a lack of sufficient ration than suffer from not having this ration properly balanced. The first step in economy is to save an abundance of cheap succulent feed which grows on our Iowa farms every year. Balance this with clover or alfalfa grown on the farm. If we buy a ton of protein from the feed man we have the feed and he has the money, but if we grow a ton of protein on our farm we have the feed and the money both.

We have very few dairymen in Iowa, but we have lots of men who are keeping and milking some cows, not only for the income they get from their cows but for that and for the purpose of stocking their farms with young growing stock. These men own large farms and the question of farm labor is such that it is impossible for them to go into intensive dairying. But we think that with proper methods of feeding they can continue to keep what they are pleased to call their dual purpose cows and continue to stock their farms with well bred young stock. We have read some well written articles showing that it was not possible to grow beef any more on our Iowa farms. We have talked with several farmers in the past month that sold beef cattle on the Chicago market above 7½ cents per pound and they said the cattle lost them money. We have seen in the last thirty days thrifty young hogs go begging for buyers at public sale at much less than the market price, simply because the farmers present had failed to provide some cheaper feed than sixty cent corn with which to carry their own hogs through the winter till grazing time next spring. The cost of feed enters just as largely into the cost of producing beef and pork as it does into the cost of producing milk and butter. We are told that the average cow of Iowa only produces 140 pounds of butter per year. This, at 25 cents per pound, would be $35.00 per year. We are also told that it costs $35.00 to feed the average cow one year. We have simply made an even trade. We have traded our feed to our cows for butter-fat. We have sold the butter-fat for cash and have our farms the richer from having our feed eaten on the farm. And we think this is better than selling the crop because when we come to selling the crop that we generally feed to our cows we would find a large part of it unmarketable and our farms would be the poorer from selling the crop off the farm. So we think we are still ahead if our cows do pay even on paper.

Before we go at it to change these conditions would it not be well first for us to determine whether the trouble lies entirely with the poor quality of our cows or does a great part of it come from our expensive and wasteful methods of feeding. Our experience teaches us that the quick solution of the matter is to change our methods of feeding. This we can do in one year, while the grading up of our herds will take several years. Allowing $5.00 per acre rent on land, $7.00 per acre for growing the corn and $1.00 per ton for putting into silo, corn silage can be grown in Iowa for $2.00 per ton, figuring only twelve tons per acre. Eight tons of corn silage will keep a cow a year. This would be keeping a cow one year for $16.00, leaving a nice margin between that and $35.00.

Now, don't understand me to say that I think any cow will do her best on corn silage alone. But I do say that the cows of Iowa will do much better if fed all the silage they will eat than they ever have done from the old methods of feeding. We are not going to quit producing beef in Iowa and we are going to continue to increase our milk and butter yield, by growing all the corn we can grow on all the corn land we have and put enough of it in silos to winter all the stock on the farm. Then get scales and test machines and weed out the poor cows and during the years that it takes to grade up your herd they will still be making you some profit. I thank you.

PRESIDENT: Our constitution and by-laws, which I believe are about 17 years old needed to be revised and I appointed a committee to look them over. I believe Mr. Kieffer is chairman, and we will hear from him.

MR. KIEFFER: We, your commitee, appointed to amend the by-laws of this association, beg leave to make the following report:

Moved that the by-laws be amended by adding to Section 2 thereof the following: "The treasurer shall give a good and sufficient bond in such sum as the executive committee may require; said bond to be subject to the approval of the executive committee.

Moved that Section 5 of the by-laws of the Iowa State Dairy Association be amended by striking out the last sentence thereof, which is as follows: "And that there be but one class of creamery butter recognized in the contest of the exhibitors at the convention of this association, which shall include both separator and gathered cream," and substitute the following: "And that there be but two classes of creamery butter recognized in the contest of the exhibitors at the convention of this association, one of which shall include butter made from whole-milk and the other to include butter made from gathered cream.

That Section 6 of the by-laws be amended by dividing said Section 6 at the word "committees" in line 7, by numbering the same Section 7. Preceding the said word "committes"; then add to said new Section 7 after the word "industry", the following: "Said legislative committee to have the power and authority to appoint two additional members when in their judgment it is deemed necessary."

P. H. KIEFFER,
H. J. NIETERT,
Committee.

The amendments as read were approved.

PRESIDENT: Mr. Wright has a resolution of a little different character.

We, the dairymen of Iowa, respectfully ask our members of congress that the duties on dairy and farm products be maintained; that a copy of this resolution be forwarded by the secretary to our representatives and senators in congress.

The breeders of dairy stock in Iowa unanimously request the Iowa State Board of Agriculture to furnish better facilities for showing dairy stock at the Iowa State Fair. They also urge that the superintendent of cattle for the fair put forth every effort to induce breeders of dairy cattle in Iowa and adjoining states to show their stock at this fair. We further respectfully request him to appoint an assistant superintendent to have charge of the dairy cattle exhibit and look after the best interests of the exhibitors in this class.

PRESIDENT: With reference to that resolution I would say that the dairy cattle at the Iowa State Fair for some time have had to take what I call a back seat. I have exhibited at the Illinois State Fair for a number of years, and I well remember when Illinois had no better showing of dairy cattle than Iowa. About five years ago they appointed a dairy cattle superintendent, who made it his business to go among the breeders to get out a showing of dairy cattle. The consequences are that the dairy cattle showing in Illinois for the last three or four years has been equal to that of the beef breeds. Last year they had nine herds of Holsteins, eight or nine of Jerseys, seven or eight of Guernseys, four or five of Ayreshires, besides other dairy breed representatives. Conditions over there are much the same as they are in Iowa, and what we want is an effort along the same line—to get out a showing of dairy cattle in Iowa, and Mr. Wright's resolution is to sort of waken our fair people to the fact that something should be done.

MR. WRIGHT: Mr. Barney has taken his cows there, and a good many others have done so, during the month of August and had to exhibit them under conditions already described by Mr. Odell, and until such time comes that the state of Iowa opens up her purse strings and gives them some money it will be worse each year. The hog men have down there the finest hog pavilion there is in the country, but there isn't a building down there you would allow your cattle to remain in execpt one. Breeders go down there and the conditions under which they have to exhibit are rotten.

MR. BARNEY: Mr. Wright is correct in his statements. The dairymen don't propose to show their cattle up there in a hen house.

The resolution as read was unanimously adopted.

[NOTE.—The above resolution and remarks could better have been directed to those who were empowered with authority to provide funds for the improvements necessary at the State Fair and Exposition Grounds. The State Board of Agriculture has done a good work the past seven or eight years in adding necessary improvements at the State Fair Grounds. Not only have they expended the surplus of each fair, amounting in the aggregate to over $200,000.00, for additional permanent equipment, but have secured from the legislature from time to time additional funds for the same purpose. The dairymen must know that the needs of the fair are large and varied, and that it takes time and money alone to provide suitable buildings for all purposes. As to the exhibit of dairy cattle, in our judgment the fault for the scarcity of dairy cattle shown lies with the breeders of these cattle and not with the fair management. The classification offered is up to date, but the lack of interest taken in getting out a good exhibit by the breeders is deplorable. It would appear that with the splendid field Iowa now affords for the sale of dairy cattle, those engaged in breeding this type would take greater interest in seeing a good exhibit at the annual State Fair. Just a word of advice: don't be selfish. If conditions with reference to stabling are not as they should be, remember the conditions of other exhibitors are equally as inadequate, and in many instances, worse. Lend your assistance for the betterment of the improvements in all departments; they are as necessary as new cattle barns.—EDITOR.]

CHAIRMAN: The next is an address by Prof. Bower, of the Iowa State College.

THE BUTTERMAKER IN HIS RELATION TO CREAMERY MANAGEMENT.

PROF. JOHN BOWER, AMES, IOWA.

Mr. Chairman, and Brother Dairymen: The subject that I have chosen to deal with is, as stated on the progarm, "The Buttermaker in His Relation to Creamery Management." In one sense it is needless at this moment to point out to the makers before me just how intimately they are related to this important subject. Many of you believe and rightly believe that without the buttermaker not much butter, good nor bad, excellent or indifferent, specials or extras, would be made. In that sense you are right but it is in a more general sense and later in a more particular sense that I wish to speak to you.

As you are aware two great systems of management with modifications are engaged in a struggle for the butter-fat trade of this country. Of these systems I have naught to say at the present moment. What I desire to do is to point out in both systems the importance of the maker as a factor in the successful management of the creameries in either system.

Taking the co-operative system, in which most of the makers here before me are interested, I believe that the maker makes or unmakes the system. This is becoming more and more noticeable as competition becomes keener. By that I mean that the success of that particular creamery in this system is and will be dependent almost wholly upon that maker. Incidentally other factors enter in but not one factor bears such a part as this one.

Some years ago the success of many of the co-operative creameries depended upon the absence of competition. In many places this is true still. In a large measure, however, this condition of affairs no longer exists and we have to look to better systems of management if the system as a system is to hold the premier position. Now in looking for better systems of management to whom do we look? Usually the directors of a co-operative plant are farmers who as a class are noted for lack of business training. The secretary though better informed along business lines is not often better fitted than his associates, the president and directors. And there is a good reason for this. These men do not realize that the volume of business in one day in a creamery is often as much as passes through their hands in six months. They do not realize that in handling butter-fat they are handling a product three or four times the value of most other farm products. Besides their interests are not centered in the success of the creamery. They are interested and intensely interested in the success of their farm. The farm is primary, the creamery is secondary in importance. Can you expect a creamery of such a sort to compete with one where the management is centered in the hands of a man whose very existence as manager of that plant is dependent upon its success?

Besides, we know that this class of manager is inclined to practice small economies. You know and I also know through experience the difficulty of getting the absolute necessities of the creamery. Up-to-date machinery does not appeal to him. Pasteurizers and starter cans are but the phantasies of a disordered brain to one whose wife Maria made the best butter in the county without such fool apparatus. A piece of new belting, repairs to machinery, necessary improvements here and there all come within the compass of their economical tendencies. This would not be so bad if this tendency did not extend to the maker. Even at this day and age we have advertised in dairy papers a want ad desiring makers at from $40.00 to $50.00 per month. What kind of makers do they expect to get for that price? Is it for nothing that the managers of the central plants are paying for makers twice or three times what is being paid in the small creameries?

It has been stated on platforms and you have heard it argued elsewhere that a small creamery could not afford to pay for a high priced maker. I am firmly convinced that if the creamery has the right to exist as a creamery they cannot afford to be without a high priced maker, provided that price actually pays for ability and not for bluff as is sometimes the case. In a creamery whose average daily make is 300 pounds, one cent on quality alone would be sufficient to pay the difference between a $40.00 per month man and one at $100.00 per month and then leave the $30.00 to help pay the running expenses of the creamery. An increase of five per cent on the overrun which is quite within the realm of possibility in many instances would on the same volume of business justify the management in paying the maker from $80.00 to $90.00 per month more than the poorer maker. Think then what would be the difference in the value of a maker who could increase the value of the quality two or three cents. In a central plant where a maker would have charge of 8,000 to 10,000 pounds daily one cent would be equal to $80.00 or $100.00 per day. That would be a nice income for our president here. Some central plants are also guilty in playing small economy, though I can't see that the maker in a central plant has a ghost of a chance to improve the quality as compared with his brother maker in the smaller plants who comes daily in contact with his patrons.

Gentlemen, I believe the time has come when the demands upon the maker are more and more insistent. He is called upon not only to make butter of the highest quality, but to meet the competition of managers of larger plants. Our colleges and dairy schools must realize that the student who comes within their influence must know more about the management of the creamery than heretofore. Directors of smaller creameries must take counsel with the maker and if he is the right type, aggressive, resourceful, versed in methods of management as well as skilled in the process of manufacture he should be given the management of the creamery and no centralizer, however shrewd, can hope to compete with the local creamery. It would be the old problem of what would happen if an irresistible force ran up against an immovable object. Each would have to keep its place.

Not only must he be versed in all things pertaining to management and manufacture but there will be a growing demand on the part of the producer for knowledge of feeds and feeding, for pointers in breeding. On him develops the duty of extending interest in better cows and better care of hand separators, cream and milk. The initiation of cow testing associations and founding of dairy discussion clubs will be the work of his hands. Why, brother makers, dairying is only in its infancy in this state. There is scarce a land under the sun that can produce butter-fat more cheaply than we do. The call is for that maker which has the right kind of snap to him.

If I were to ask you makers what you were worth as makers and managers there is scarce a man among you who do not believe that at least $100.00 or $150.00 a month would be cheap. Yet some of you could not calculate correctly the pounds butter-fat in a ten item column, could not figure the percentage overrun if your life depended upon it, could not or would not recognize a bacterium if you met him in a dairy convention, much less in a creamery, could not tell why milk sours, why centralizers exist, who is Colantha 4th's Johanna. Some do not even know the market price of butter and care less, nor the thousand and one things an intelligent maker and manager should know. You attend dairy conventions and read indifferently dairy literature. You talk politics when you should talk dairy cow, you may or may not study the problems that confront you daily in the creamery; you may or may not enter educational scoring contests, you never would be seen in a dairy school nor do anything to burden your mind with the fundamental principles and recommended practices in the making of butter. Yet you believe yourself worthy of a salary of from $100.00 to $150.00 a month and some of you want every afternoon off to play base ball in the summer, go duck shooting in the fall and do nothing in the winter and as is too much the case, I am sorry to say, make slaves of yourself in the busy season.

You will notice that this charge is not laid at the door of you all. There are many of you who are continually preparing yourselves for better positions. I believe as a rule the buttermaker is underpaid. As a skilled workman he should have the wages paid to this class. Besides, your hours are longer, your work more disagreeable in some ways, and unevenly distributed throughout the seasons. You should have more help in the busy season and more to do in the winter season. To those makers who work in large creameries, this is usually arranged by the manager in a manner not always to the advantage of the maker.

Managers of both systems must realize that to do the work that the maker is called upon to do requires more time than is usually given him. Skilled labor in all branches of industry is not required to work at lightning speed. Time is given to him to do the work right. Makers in central plants might with profit be allowed more time or more help to do the thing in hand. What should be considered, however, is the result. More time or more help is simply wasted time and wasted help unless definite results are obtained. Extra profits through more intelligent efforts should not all go into the pockets of investors, but part should go to the man or men who made such profit possible. It is theirs by every moral right, no matter what industrial methods dictate. I believe also that it is also good sound business policy to respond thus to well directed efforts along lines of improvement.

If this is true of the central plants it is much more true of the co-operative. We hear a great deal about the maker in the small creameries being so much a factor in education of the patron. Through him dairy education along the lines of cheaper production, and bettering of quality is to spread space. From my experience in such creameries, I found that usually when I had time to talk to the patron the patron did not have time to talk to me, and when he had time to talk to me I had not time to talk to him. When we did get together, there was other differences which took up our attention.

I believe if the maker in the small creamery is to be the factor he should be, then he should have more time to do what he should do. You cannot add to his work the burden of management without giving him the opportunity to show his hand by giving him time to check up losses, to make moisture determinations, to make chemical analysis, to better dispose of by-products, to investigate local and other markets, in fact to do the thousand and one things that are being done in order to make the business a success.

But here again I would urge the necessity of preparation on the part of the maker if he is to make good when the time calls for him to do this work. You can not drift into it. Physical strength is required in creamery work, don't forget that brain is also needed, now more than ever.

I can recall an instance which goes to show more than many words the exact relation of the maker to the successful management of the creamery. A creamery not twelve miles from here wrote to Professor McKay at Ames for a butter-maker. The case was urgent. Business was falling off. Patrons were discontented. Shareholders were sending milk elsewhere. The creamery was gradually being eaten up with debt. The maker was sent, one of the students who was taking the one year dairy course. During the year, by actual comparison of prices received for butter and that paid for butterfat during the years 1906 and 1907 he netted the creamery $2,940 over and above the increase in salary. An estimate of increase for the present year shows an advantage of $4,375 over that before the management was placed in his hands. Not only that, but business is increased, debt wiped out, number of patrons doubled, confidence restored, and there is a general feeling in the community that there is something in dairying after all.

At this particular creamery they are paying over two cents per pound butterfat over that obtained for butter and the prices of butter is above that received before the maker took up the management. Of this I have not taken into account in the figures given above. Fancy if you will a centralizer trying to get trade at such a point.

Had I the time to investigate I believe such instances are not rare. I see before me men who could point to records equally good. Enough has been said to show the importance of the maker in both systems in the successful management of this business.

DO THE DAIRYMEN NEED A PROTECTIVE ASSOCIATION?

J. G. MORE. OF WISCONSIN.

Mr. President, Ladies and Gentlemen:—I have been asked to talk to you today on the subject "Do the Dairymen Need a Protective Association," and I believe the reason therefore is the interest manifested in the cream rate case, and the part the Wisconsin Protective Association took in that case.

I intend to leave it to you to answer that question and in order that you may intelligently answer it I desire to call your attention to some things that have happened in the past, for it has been said that we may judge of the future by the past. For some years prior to and for some years after 1894 the dairy industry of the United States was laboring under the unfair competition of makers of oleomargarine, who not content with selling their product for what it really was, insisted and presisted in palming it off on the consumer as and for butter and at a price but a shade under that which the genuine article was selling for.

The burden imposed on the dairy interests by this unfair competition became so great that in January, 1894, the National Dairy Union was organized in Chicago for the purpose as stated in its first report "to secure legislation to prevent the fraudulent sale of butter substitutes and to encourage an increased and more economical production of high grade dairy products."

That some such step was necessary is evident from the fact that in 1902, the last fiscal year of the existence of oleomargarine artificially colored, there was made in this country 123,180,075 pounds, equal to 2,053,001 sixty-pound tubs or as much oleomargarine as one thousand large creameries turn out the butter. Quoting from the Creamery Patrons' Hand Book, "In other words 27 oleomargarine factories turned out oleomargarine equal in quantity to 25 per cent of the butter product of all the creameries of the United States.

That the effect of the unrestrained and fraudulent sale of oleo for butter was felt by all, can readily be seen by a perusal of the list of the organizations represented in the formation of the National Dairy Union from 18 different states as follows:

New York Mercantile Exchange.
Baltimore Produce Exchange.
Philadelphia Produce Exchange.
Chicago Produce Exchange.
National Grange.
Patrons of Husbandry Supreme Association.
Chatauqua Grange.
New York State Grange.
Ohio State Grange.
Indiana State Grange.
New Jersey State Grange.
The State Dairy Associations from Illinois,
Wisconsin, Missouri, Nebraska, New York, Indiana and California.
Illinois State Board of Agriculture.
New York Department of Agriculture.
New Jersey Dairy & Fruit Commission.
Minnesota Dairy and Food Commission.
Illinois Experimental Station.
Western Holstein Friesian Association.
Holstein Friesian Association of North America.
Jersey Cattle Club.
Michigan Jersey Cattle Club.
St. Louis Butter & Cheese Dealers' Association.
National League of Commission Merchants.
Chester County Creamery Association.
Elgin Dairy Association
St. Louis Dairy Company.

California Creamery Company, and last, but not least, the National Creamery, Butter and Cheese Makers' Association.

D. W. Wilson, Secretary of the National Dairy Union, in his address at the first meeting said, "We need an organization around which the dairymen can rally and devise means and ways for their own protection from the great fraud that is so prevalent. We must impress upon all the people of this country and especially our legislators the importance and value of the dairy and the votes that are behind it so that when we ask for proper legislation either national or state, we shall have a backing that will secure what we demand."

Some of you older buttermakers and creamerymen can remember the low prices received for dairy products when the twin evils of oleo and filled cheese were allowed to masquerade in the guise of the genuine; when the filled cheese law was passed, due to the efforts of organized dairymen, the price of the pure article was raised 25 to 33 per cent and since the passage of the law of 1902 which relieved us of much of the unfair competition of the oleo makers, the price of pure butter has increased, thus stimulating production. The average price in 1896 (the lowest in 27 years) was 17.8 cents and under the stimulus of efficient laws, enforced as well as the means at hand would permit, the average price has raised until in 1907 it was 27 2-3 cents.

In the dairy press and at every convention for some years past since the hand separator has come into general use, complaints long and loud have been made that the methods of the centralizers in obtaining business have been detrimental to the local creameries, that they have resorted to methods of a type commonly known as "Standard Oil Methods" and consisting in the main of paying larger prices for butterfat than it was worth where there was competition, of raising the test, of accepting cream in any condition regardless of its fitness for making an article of human food; of a desire to monopolize the industry and so on.

I quote from the report of the Chief of the Bureau of Animal Industry on this point as follows:

"The methods of the centralizers are sometimes very reprehensible. Where these concerns have come into competition with small creameries, they have raised their prices to a point that made it impossible for the small concerns to continue, and have thus forced the latter out of business. Competition having been destroyed and a monopoly secured, the prices paid to the farmers were lowered. The large concerns operating over a great territory, with here and there a competitor that they wished to put out of business, could in one locality raise the price paid above that possible to pay with profit, and at other places decrease the price so little as not to be apparent and more than offset the loss. This ability to destroy competition without self-injury has been used effectively in many localities."

Investigating the business of the centralizers, it was found by certain friends of the local creameries that the centralizers had a much more favorable rate from the railroads for transporting cream than the local creameries had for transporting butter. So far as I know this first found public expression at the Wisconsin Buttermakers convention held at Wausau, February 5-8, 1907, when Hon. J. Q. Emery, addressing the convention, spoke in part as follows:

"In my judgment never in the history of this state has the local creamery industry been so menaced as at the present time. If our local creamery interests in Wisconsin, this magnificent dairy state with a total annual income from her dairy products of more than fifty-seven million dollars, is to continue and advance that industry, there are certain conditions that are absolutely indispensable. First, and foremost, cleanliness in dairy products from cow to consumer; second, in our creamery work the testing of butter-fat in cream or milk of the patrons must be done with intelligence, with painstaking care, and with absolute honesty; third, there must be no discrimination in railroad transportation by the roads between the various classes of products of these dairy products.

Now, gentlemen, this is a serious proposition and there is no body of men so called upon to deal with this proposition as the Wisconsin Dairymen's Association and the Wisconsin Buttermakers' Association. I state to you things that I know, and I say a local creamery is charged one dollar a hundred to ship its butter to Chicago by express. Now keep that in mind; at the same time, from the same place they take one hundred pounds of cream to Chicago for 26 cents. The cream is 40 per cent butter-fat. Now, under the arrangements, a large proportion of this cream that is shipped to Chicago centralizers averages 40 per cent butter-fat. It amounts to this, that the Chicago centralizers get their butter for 52 cents a hundred for transportation charges, while the Wisconsin local creamery pays $1.00 a hundred to get its butter to Chicago. Gentlemen, that is not a square deal. In addition to this, the railroads return the cream cans free of charge, they do this by shipping as baggage.

Thus it will be seen that by this action of the railroads the Wisconsin local creamery is placed in a position of particular hardship if this thing continues. No Chicago centralizer, nor any other centralizer can get out of a farmer's cream any more, honestly, than a local co-operative creamery can get out. Therefore it is to the interest of every Wisconsin farmer to stand by the Wisconsin local creamery. He gets all there is in the over-run, and everything! The dairy sentiment of our state, the railroad commission and all the forces of our state should stand like a solid wall in defense of our dairy interest as a part of Wisconsin. Not only should they stand as a stone wall, but should be just as aggressive as a mighty army seeking to gain what is right and just in these matters. The Creamery Buttermakers' Association can do much to bring this matter to a right turn."

The low rate enjoyed by the centralizers in the transportation of cream can best be shown by again quoting from the report of the Chief of the Bureau of Animal Industry for 1907, as follows:

"Perhaps the most potent factor, however, in restricting the business of the small creamery has been the special low rates reported to be granted by the railroads to the big creameries. These rates were understood to be much lower than for any similar commodity, being only about one-third of the rate on butter. In Nebraska, in the best territory, the gross earnings for hauling cream were but thirteen cents per car mile, while the settling basis between railroads for hauling empty cars was fifteen cents per car mile."

This low rate was put into effect at the instance of the president of the Beatrice Creamery Company, at a time when conditions in Nebraska were at their lowest ebb, and have continued in force ever since, and have been used as a lever to obtain like rates in other territory. Notwithstanding this low rate dairying in the states, where the centralizers have a virtual monopoly, has not increased like it has in Minnesota and Wisconsin and again let me quote from the report of the Chief of the Bureau of Animal Industry:

"The investigation shows that the co-operative creamery yields the largest returns to the farmer for his butter-fat. The individual and combination creameries usually being located in close competition with the co-operative creameries, pay very nearly as much. The centralizers, where they have gained a monopoly, pay as little as the farmer will accept. Reports for July, 1907, show that in Kansas and Nebraska, where the monopoly appears to be complete, the farmers received only 17 to 18 cents a pound for their butter-fat, while in northern Iowa, Minnesota, Wisconsin and Illinois, where the co-operative creameries have the field, the prices were from 25 to 26 cents.

The system of killing the small creameries has been carried on to the fullest extent in southern Iowa, Missouri, Kansas and Nebraska. Taking Kansas as an illustration, it is found that the number of creameries declined from 133 in 1900 to 67 in 1905, while in Minnesota in the same period there was an increase from 582 to 905.

There can be no doubt that the tendency of the centralizing system is bad for the farmer and the public. The effect is to exact high prices from the consumer and to pay low prices to the farmer, the profits going to the large operator who control the situation. The small local co-operative creameries should be encouraged."

Realizing that at least not only was dairying not increasing in the territory covered by the centralizers and that they were losing money by the low rates, the railroads adopted a new schedule of rates considerably higher than the ones so long in force, but before the time set for their collection the centralizers appealed to Judge Kohlsaat of the United States Circuit Court for an injunction restraining the roads from enforcing the new rate until such time as the Interstate Commerce Commission could hear the case; the injunction was granted.

On July 30, 1907, a call was issued by Mr. Fred Seeber, of Waterloo, Wisconsin, for a meeting at Watertown, at which time some of the above related facts were set forth and the creamery men present decided that is was essential to their continued welfare that something should be done and the Wisconsin Dairy Manufacturers and Milk Producers Protective Association was the result.

In our ignorance of what was needed some of us attended the hearing before Judge Kohlsaat, but learned that in order to have any opportunity of presenting our side of the case it would be necessary to be made parties to the suit and employ an attorney to represent us. This we decided to do and our attorney, Mr. John Barnes, former chairman of the Wisconsin Railroad Commission, filed an intervening petition with the Interstate Commerce Commission at Washington, setting forth our interest in the matter and which was accepted, making us parties to the suit.

Previous to the hearings in Chicago, the Wisconsin Railroad Commission, said to be the best railroad commission in the United States, of its own motion decided to investigate the rate on milk and cream, and at the hearing November 5, 1907, the Wisconsin Protective Association had a chance to show what it was worth and it was no doubt the able presentation of our side of the case by Judge Barnes that led the commission to make a favorable decision, separating for the first time milk and cream and raising the rates on cream. The printed decision, covering 64 pages, is said to be the best exposition of this matter so far made and was introduced as part of the exhibits in our case at Chicago.

The value of an organization in fostering and protecting the dairy interests is well explained by the testimony of Chief Webster at the September hearing, as follows:

"The creameries for a certain period of years stood still and went back all through the country. In other parts there was an organization on the part of the state through the schools (and otherwise) to sustain the dairy interests in this state. In Kansas there was no such organized interests whatever. The creameries were absolutely independent and dependent on their own business."

"*They went down possibly because they had no assistance. If they had the same assistance in Kansas that they had in Minnesota they would probably have them in Kansas yet.*"

Further, "it has been my experience that during the last half dozen years there has been in certain quarters a decided improvement, in some quarters there has been a decided going backward."

QUESTION: What states have there been a decided improvement?

MR. WEBSTER: In those states where there was good, strong local organizations that have stood back of the farmer, encouraging them to bring good cream.

QUESTION: And what states have you in mind?

MR. WEBSTER: Minnesota and Iowa, Northern Wisconsin would be included and perhaps some parts of Illinois.

Our friends, the centralizers, have organized under the name of the American Creamery Butter Association and that the organization is permanent would seem from the fact that they have engaged a secretary for a period of five years.

The ostensible purpose of the organization is said to be the improvement of the quality of the cream received, and the publication of the Northwestern Dairymen's and Produce News is another indication along this line, but it would seem as suggested by Chicago Dairy Produce that the quickest way to produce the quality would be to make a distinction in price that would make it worth while to produce a better quality.

However, a letter sent out to the creamery men of Minnesota by the secretary of this new centralizers' organization, shows that while the improvement of quality may be one of the aims of the association it is not the end for it is evident that the letter referred to asking for information as to the quantity of cream shipped from Minnesota points, would be used by the attorneys for the centralizers, to influence the Interstate Commerce Commission at the hearing in Washington, December 2d.

The true reason for asking for information as to amount of cream shipped is apparent, when it is known that Commissioner Prouty asked at the June and September hearing if the centralizers desired a blanket rate for the entire territory involved, or one rate for east of the Missouri river and a different one west of the river. Their leading attorney professed at both hearings, that he did not know what they did want, but, Judge Hainer of Nebraska said that he didn't know but what it would be a good thing to place a Mason and Dixon line around Wisconsin, Minnesota and eastern Iowa, and give that territory a higher rate than the balance of the territory where the centralizers controlled the business."

No doubt in thinking it over, the rich pickings in Minnesota has aroused anew the cupidity of the centralizers and hence this move on the part of their secretary to obtain information seeking to place Minnesota in the ranks of centralizing states.

The state of Iowa in 1900 had 914 creameries and in 1908 only 552, the falling off largely due to the work of the centralizers in the state. President Haskell of the Beatrice Creamery Company testified that when the company he represents started in Chicago, in order to obtain business, he shut up ten creameries around Elkader, Iowa.

Hon. H. R. Wright, Dairy and Food Commissioner of Iowa, sent out a circular letter to all the creameries of his state as follows:

"Dear Sir,—There is pending before the Interstate Commerce Commission a petition by the rairoads seeking to raise the transportation rates on cream shipped to Chicago. This movement is also supported by an organization of Wisconsin dairy manufacturers and producers and by three associations of Minnesota.

The undesigned expects to attend the hearing of this case as a witness in regard to Iowa conditions, and very much desires to know the ideas of the buttermakers and creamery managers on this subject, so that he may accurately represent them to the commission.

Will you kindly answer the following questions and add such other information and opinions as you may desire? Please also present this matter to your secretary or manager and get his opinion as well as yours upon this same sheet.

The matter of cream rates is of very great importance and you are urged not to neglect this letter.

In order to be of value your answer must be at hand by next Sunday, as the hearing begins Monday morning next.

Yours truly,
H.R. Wright,
Commissioner."

To this letter 293 were returned of which 25 did not volunteer any information, not having come in contact sufficiently. Seven thought the rates were all right as they were, while 243 answered as follows:

Have present shipping rates on cream been any advantage to your creamery business? No.

Or to milk and cream producers of your community? No.

Does the shipping of cream to central plants result in the production of a better or poorer quality of cream than formerly? Poorer.

Do the central creameries doing business in your vicinity pay the same price for cream as elsewhere or do they pay different prices in different localities? Different prices in different places.

Do buyers for central plants in your vicinity grade the cream? Not at all except on basis of test.

Do they reject any cream on account of bad quality? No.

Are the present rates on cream in your vicinity favorable to the central plants at the expense of the local plants? Yes.

What, in your opinion, will be the result of a continuation of these rates? General disaster to the local creameries."

From such a showing it would seem as though the creameries of Iowa were awake to the situation and yet, in the face of this sentiment, no organized assistance has been rendered by Iowa in this fight. And if we are to judge the future by the past what difference will there be in cream conditions of Iowa from that of Kansas? Let me again quote Chief Webster:

"They went down possibly because they had no assistance. If they had the same assistance in Kansas that they had in Minnesota they would probably have them (the local creamery) in Kansas yet."

In all this argument about rates and their effect it will have on the different systems of creamery management, one basis fact should not be overlooked, and that it what is best for the producer. Let me quote Commissioner Prouty:

"Now, what I would like to do, I don't know now how much bearing it would have on the case, but what I would like to do is to get at it. What is the best method for the farmer to handle his business? What secures him the best market for his cream? In what way would the producer look at this quesion? It seems to me from the standpoint of largest financial returns, which gives the most and which is best in the long run the centralizer or the creamery?

As to prices paid let me say that according to the summary compiled by Hon. B. D. White of the dairy division, Washington, from reports received from the creameries themselves it appears that in 1907 the farmers in Minnesota were paid by the local creamery an average of 27.99 cents for butter fat and the cost of making per pound of fat 2.28 cents; in Wisconsin the net price to the farmer was 28.76 cents per pound, cost to make, 2.10 cents. In Iowa the farmers were paid 28.20 cents for butter fat and it cost 1.85 cents to make a pound of butter.

The average price in Nebraska is 23.95 cents and certainly there must be some good reason why the local creameries of Iowa pay net to the farmer 28.20 as against the 23.95 paid to the farmer in Nebraska. It is well said that this great difference is not accounted for by any change in natural conditions.

Let me quote you prices paid by the David Cole Creamery Company at Ross, Iowa, in comparison with Wisconsin Co-operative creameries:

	buying. No.days	Price	Wisc. Cry.	Difference.
January	4	27	33⅝	6.5
February	4	31	36	5.
March	5	25.8	32¾	6.8
April	7	26.2	33¼	7.
May	9	20.4	25⅞	5.3
June	9	18.8	25⅝	6.7
July	9	18.4	26¾	8.2
August	7	18	27¼	9.2

It has been charged that the centralizers pay different prices on the same day dependent on whether there was local competition or not.

February 25, 1908, Fairmont Creamery Company paid prices as follows:
Gallatin, Mo., 34 cents distance shipped, 230 miles.
Stewartsville, Mo., 30 cents; distance shipped, 180 miles.
Hamilton, Mo., 40 cents; distance shipped, 220 miles.
Albany, Mo., 29 cents; distance shipped, 210 miles.
Difference of 11 cents.

This is the testimony from the sworn statements of the centralizers themselves. No evidence has as yet been produced to show that the local creameries pay different prices on the same day to their patrons.

On the standpoint of quality it is general knowledge that the quality of our butter had deteriorated in the last ten years, and speaking on the subject Chief Webster said, "As the systems exist now, the local creamery is making by far the best butter.

The longer distance cream is transported the greater the impossibility of making good butter. To make good butter you have got to have as short a time as possible between the milking of the cow and the getting of the butter in the tub.

It has been shown that the local creamery serves best the interests of the producer, the farmer. It is equally in the interests of the consumer. The interest of the two classes, the producer and the consumer, are bound up together. The consumer desires good butter and is willing to pay a good price for it, and any system that lowers the quality of the butter manufactured will ultimately harm the producer. His interests demand the production of a superior article and such is the demand of the consumer.

The local system is the only one that furnishes opportunity for proper inspection and supervision on the part of the state, and our experience in the past has demonstrated the great value of such inspectors and as a rule such supervision has come largely from the insistent call of organized dairymen, and it seems to me that if the future is to see the proper development of the dairy business along proven lines, then certainly the dairymen need the protection of organized effort. I thank you.

A motion was made by Mr. Wright, and adopted, donating $150 of the association funds to aid in carrying on this work.

PRESIDENT: If there is no further business to come before the convention, we will stand adjourned.

Adjournment.

ARTICLES OF INCORPORATION OF THE IOWA STATE DAIRY ASSOCIATION.

We, the undersigned citizens of the State of Iowa, whose names are subscribed to these articles of incorporation, have associated ourselves together for the purpose and upon the terms and by the name herein stated under and in pursuance of the laws of the State of Iowa.

First.—The name of this corporation shall be the Iowa State Dairy Association.

Second.—The purpose for which this corporation is formed is to promote the dairy interests within the State of Iowa and everything pertaining thereto and connected therewith.

Third.—The principal place of business of this corporation shall be in the City of Des Moines and State of Iowa.

Fourth.—The duration of this corporation shall be fifty years from and after the acknowledgment and recording of these articles of incorporation, unless sooner dissolved by a majority of the members of this corporation.

Fifth.—There is no capital stock, nor are there any shares of stock in this corporation.

Sixth.—The officers of this corporation shall be one president, one vice-president, one secretary and one treasurer, who shall be elected at the annual meetings of this corporation from the members thereof, and whose powers, authority and duties shall be fixed by the by-laws of this corporation.

Seventh.—The names of the officers of this corporation for the ensuing year are as follows, namely: President, O. T. Denison; Vice-President, Peter G. Henderson; Secretary, C. L. Gabrielson; Treasurer, S. H. Sibley.

Eighth.—That the private property of the members of this corporation shall be exempt from corporate debts.

Ninth.—Fees for membership and annual dues for membership will be assessed as the corporation by its by-laws shall determine, which fees and dues will be applied for promoting the purposes for which this corporation is formed.

Dated at Waverly, Iowa, November 12, 1891.

O. T. DENISON,
E. C. BENNETT,
S. H. SIBLEY,
W. L. NEWTON,
A. C. TUPPER,
C. L. GABRIELSON.

(Amended).

BY-LAWS OF THE IOWA STATE DAIRY ASSOCIATION.

NAME.

Section 1. The name of this association shall be the Iowa State Dairy Association, as provided by the articles of incorporation filed with the Secretary of State.

OFFICERS.

Sec. 2. The officers shall be president, vice-president, secretary and treasurer; said officers constituting the executive committee. The treasurer shall give a good and sufficient bond in such sum as the executive committee may require; said bond to be subject to the approval of the executive commitee.

ELECTION.

Sec. 3. All officers shall be elected by ballot. A majority of the vote of the membership present shall be required to constitute an election; said election being a special order of business at 11 a. m., Thursday session of the convention. Their term of office shall be for one year from the first of January following.

Sec. 4. The place of holding the annual convention shall be selected and the date fixed by the executive committee, said committee to be composed of president, vice-president, secretary and treasurer.

Sec. 5. That every buttermaker who attends the convention shall be expected to send or bring one package of not less than twenty pounds of butter from the factory where he is employed at the date of convention, same to be sold by the association and the proceeds thereof to be used to pay express charges and membership fee of the exhibitor, the balance to be donated to the association. And that there be but two classes of creamery butter recognized in the contest of the exhibitors at the convention of this association, one of which shall include butter made from whole-milk and the other to include butter made from gathered cream.

MEMBERSHIP.

Sec. 6. Any person may become a member of this association upon the payment of a membership fee of $1.00. The annual dues shall be $1.00, payable to the treasurer on or after January 1st of each year. Said dues must be paid before any member can become an exhibitor or exercise the right to vote.

COMMITTEES.

Sec. 7. The president shall appoint the following committees of three members each:

Reports—To whom shall be referred the annual reports of the president and secretary.

Resolutions—To whom shall be referred all resolutions, without debate.

Finance—Whose duty shall be to audit the accounts of the secretary and treasurer; to report at the evening session, Thursday.

Legislative—Consisting of five members, of which the president and secretary shall be ex-officio members, to co-operate with our dairy commissioner and similar committees from our sister states, for the advancement of the dairy industry. Said legislative committee to have the power and authority to appoint two additional members when in their judgment it is deemed necessary.

AN ACT to Encourage the Dairy Industry of the State of Iowa, to aid in Providing Instruction in Practical and Scientific Dairying and Making and Appropriation Therefor.

Be it Enacted by the General Assembly of the State of Iowa:

Section 1. Whenever the organization now existing in the State of Iowa and known as the Iowa State Dairy Association shall have filed with the Secretary of State of the State of Iowa verified proofs of its organization, the names of its president, vice-president, secretary and treasurer, and that it has one hundred (100) bona fide members, such association shall be recognized as the Iowa State Dairy Association of the State of Iowa, and be entitled to the benefits of this act.

Sec. 2. For the purpose of aiding in the promotion and development of the dairy industry of the State of Iowa, such association shall cause to be made such inspection of dairy farms, dairy cattle, dairy barns and other buildings and appliances used in connection therewith, dairy products and methods as they shall deem best and shall arrange to furnish such instruction and general assistance, either by institutes or otherwise, as they may deem proper to advance the general interests of the dairy industry of the state.

Sec. 3. For all the purposes of this act the said association shall act by and through an executive committee of seven (7) members, consisting of the president, vice-president, secretary and treausrer of the Iowa State Dairy Association, the dean of the Iowa State College of Agriculture and Mechanic Arts, and the professor of dairying at the same institution, and the Food and Dairy Commissioner of the State of Iowa.

Sec. 4. They may employ two or more competent persons who shall devote their entire time to such inspection and instruction under the direction of the said executive committee, and who shall hold office at the pleasure of the committee, and who shall each receive a salary of not to exceed fifteen hundred dollars ($1,500.00) per annum, and actual expenses while engaged in such work.

Sec. 5. The salaries of all persons employed under the provisions of this act shall be paid monthly out of the appropriation herein provided and all traveling expenses and all general expenses incurred by the association in carrying out the purposes of this act shall be paid out of the said appropriation and in the manner provided by sections 170-d, 170-e and 170-f of the supplement to the Code, 1907, and upon statements filed with the executive council as therein provided; but no such bill shall be paid until after it shall have been audited and approved by the association in such manner as the executive committee shall provide.

Sec. 6. The said association may require such reports from their employes as they shall deem proper, and shall make to the governor an annual report of their proceedings under this act, which report shall be published as a part of the proceedings of the annual convention of the Iowa State Dairy Association.

Sec. 7. For the purpose of carrying into effect the provisions of this act and the payment of all expenses connected therewith, there is hereby appropriated out of any funds in the treasury of the state, not otherwise appropriated, the sum of ten thousand dollars ($10,000.00) or so much thereof as may be secessary to pay the salaries and expenses of the employes appointed under the provisions of this act and the expenses incurred by the Iowa State Dairy Association in developing and promoting the dairy industry of the state as by this act provided.

Sec. 8. This act, being deemed of immediate importance, shall take effect and be in force from and after its passage and publication in the Register and Leader and the Des Moines Capital, daily newspapers published in the city of Des Moines, Iowa.

Approved April 12, A. D. 1909.

PART VIII.

EXTRACTS FROM

STATE DAIRY COMMISSIONER'S REPORT OF 1908.

TWENTY SECOND ANNUAL.

H. R. WRIGHT, Commissioner.

The statute requires that the dairy commissioner shall make annually a statistical report covering the dairy business. Since this law was enacted, additional work has been given to this department in the enforcing of the:

PURE FOOD LAW,
PAINT AND LINSEED OIL LAW,
CONCENTRATED FEEDING STUFFS LAW,
CONDIMENTAL STOCK FOOD LAW,
AGRICULTURAL SEEDS LAW.

The volume of work undertaken in enforcing these laws is much larger than that originally undertaken by the dairy commissioner, but not of more importance. There are in the department sixteen office employees, two of which are known as assistant dairy commissioners, who devote their time exclusively to work among the creameries and the statistical and clerical work in relation to the administration of the dairy work of the department is, of course, largely undertaken by the office force. It will be understood that only a part of the time of the commisioner can now be given to the dairy work, so that the amount of effort which the office can devote to the work originally intended as the duty of the dairy commissioner is lessened by the addition of other duties much greater in volume than those originally undertaken. These facts are here stated in the hope that they will be taken into account by the legislature and the dairy force strengthened at the coming session by the authorization of additional assistant dairy commissioners.

No extraordinary changes have taken place in the past year in Iowa dairy conditions. The usual large amount of butter has been produced. The ascendancy of the central plants is a little more marked than formerly and the competition between them and the local creameries is keener than before. The number of creameries on the list has decreased from 594 to 552, and there have been only a few plants built, except in the case of rebuilding of old and well established plants.

There has been little or no improvement in the quality of cream shipped by rail and almost the same is true of that delivered in other ways to the creameries of every kind. The greatest problem now confronting the maker of butter in this state is to get to his factory that quality of milk and cream from which it is possible to make butter of the high grade demanded by the markets everywhere and it has seemed almost impossible to achieve any great improvement in the raw material received.

The creameries of the state make approximately 100,000,000 pounds of creamery butter annually which has an aggregate value of nearly or quite $25,000,000. About one-third of this amount of butter, 32,000,000 pounds, is produced in thirty-four creameries of the state, which operate generally upon the plan of shipping cream to central points to be churned. These creameries make from 300,000 pounds to 6,000,000 annually each. The remaining 68,000,000 pounds of butter is manufactured in 468 creameries, which also operate about fifty skimming stations. More than 100-000 patrons and nearly 800,000 cows are tributary to the butter-making plants of the state. While the tables of this report show an increase of perhaps 10,000,000 pounds of butter made in the last year as compared with the year previous, such increase is probably due to favorable season and other minor contributing causes rather than to any permanent or extraordinary factors which would indicate continuous increases for the future. The production of butter in this state is one of the settled and permanent lines of industry for the farm and will be subject to temporary increases and decreases just as other farm crops or products fluctuate from season to season.

The state now has three condensed milk factories, located at Waverly, West Liberty and Perry and each is doing a succesful business. Other such plants are in prospect.

ASSISTANT DAIRY COMMISSIONERS.

The state has been fortunate in the character and ability of the men who have successively held office as assistant dairy commissioners, and the effectiveness of the work has been the greater by reason of the activity and interest shown by them. But the kind of work done by them as well as the amount of it does not seem to be well understood. Frequent requests come to this department asking for the services of the assistant for a week or ten days at a time. It is impossible to attempt to meet such demands upon their time. It was never intended that the assistants should take the place of the dairy school and give a buttermaker a course of instruction, nor that he should wholly train a new creamery manager or secretary, nor that he should attempt to canvass the patronage of the creamery and try to remedy difficulties that are continuously met in every creamery and which ought to be handled by the creamery management without outside help. Such work might be very desirable, both from the standpoint of the creamery and of the dairy business generally, but with but two men at work among 552 creameries it is an evident physical impossibility for the assistants to stay any extended length of time at any one plant.

This department is required by statute to enforce certain laws of the state, which duty cannot well be avoided or postponed. Also the department is in receipt of numerous and constant requests for assistance in solving occasional and unusual problems, and with the limited force at command it is not possible to even get to all the plants in a year's time, much less do any extraordinary amount of work for each. It, therefore, happens that the department is embarassed by inability to comply with some of the requests made, and by the further fact that we are obliged to discriminate against some plants in the furnishing of assistance for the simple reason that we have two men to do the work that could scarcely be accomplished by four. This is a situation for which the commissioner and assistants are not at all responsible.

There are 342 creameries which have been visited by one or the other of the assistant commissioners and help of some kind given them, but there are 203 creameries and 49 skimming stations that have not even been seen by the assistants, a condition which the department very much regrets.

Upon such visits to the creameries the assistant commissioners have instructions to see the buttermaker and the manager of the business end of the creamery, and to give to both the best assistance and advice that is possible. Also to see that the statutes of the state are complied with and if necessary to bring prosecutions for violation. It is evident that this work cannot, for lack of men and time, extend to the producer of milk or cream, though such work would be extremely desireable and valuable to the industry and to the state, but it cannot be undertaken without considerable increase of men and money.

A considerable number of complaints of low over-run have been investigated and the discovery made that the sampling by haulers of cream was at fault, resulting in tests that were too high. The sampling of cream is of such importance in the matter of testing that it ought to be checked up by the buttermaker and the over-run secured at the churn compared with that secured upon the books of the creamery secretary or manager.

The state has a very considerable number of old creamery buildings that have fallen into decay to a greater or less degree and the efforts of the assistants have been directed toward better creamery buildings, and especially towards better creamery drainage, not only because the laws require that creamery buildings and utensils shall be kept in a clean and hygienic condition, but because the best butter can only be produced in clean surroundings. Very great improvements have been noticed during the year along the line of creamery building and sanitation. The commissioner regrets that threats of prosecution seem to be the only way to compel sanitary practices in some plants and in some cases prosecutions have been undertaken by assistant commissioners and notice is here given that this practice will be followed with even more vigor than formerly.

The statute requiring the pasteurization of skimmed milk before returning the same to patrons seems to have been complied with by practically all of the few creameries still receiving milk, and but few prosecutions have been made for offenses under this law.

One prosecution of two counts has been made against a cream buyer at Gladbrook for manipulating the Babcock test. The exact offense charged was raising the test, evidently for the purpose of destroying competition and the buyer was very properly fined an agregate of $50 and costs. Numerous complaints of similar offenses have been made and some of them seem to have been well founded, but it has been impossible to secure satisfactory evidence to warrant prosecutions.

During the year the department has conducted an educational scoring contest of four numbers in addition to the State Fair Butter exhibit and the exhibit at the meeting of the State Dairy Association. The butter at each of these scorings, except that of the dairy association has been scored by the assistant commissioners and no small amount of effort has been put forth by them to make these scorings successful. Nearly seven hundred tubs of butter have been scored and careful criticisms made and sent to the respective makers of the exhibits in the hope that these criticisms will be of value in the further improvement of their product. It is expected and intended that a similar scoring will be held during the next year.

QUALITY OF IOWA BUTTER.

From all over the country, without an exception, makers of butter and particularly dealers in this product are complaining that the butter which they now make is at least not better than that which they made three, or five, or ten years ago, notwithsanding increase in knowledge and ability of buttermakers generally, and notwithstanding the introduction of improved methods during the last decade. No part of the country that produces butter at all is free from this complaint, and in the last analysis of causes for the situation practically everybody has agreed that while there may be other reasons, the principal reason is the character of the raw material which comes to the creamery. Every butter producing state in the Union is giving great quantities of the poor grades of butter, so much so, that the markets of the country are always overstocked with undergrades and are always short on the higher and better grades. It is difficult, of course, to compare the quality of butter produced nowadays to that produced in the years gone by. It is perhaps true that the market is more critical; it is likely true that buttermakers, themselves, are demanding better results than formerly; it is possible that dairy schools and dairy instructors are keener in their criticisms than formerly, but at any rate, the demand for better quality of butter is universal on the part of producers, manufacturers, commission merchants, and, particularly, on the part of consumers.

In the last decade extraordinary efforts have been made by state authorities, and by dairy schools, in the direction of instruction of buttermakers along scientific lines. The thought has been often expressed that with buttermakers better trained for their work, and with greater knowledge of conditions from a scientific standpoint, a great improvement in the quality of butter would be noticeable. The efforts of these various forces has been very marked and great advances have been made in the directions as planned. Only once in a while is a buttermaker discovered that is not making about as good butter out of the material at hand as could be expected. The ability of buttermakers in this state has very greatly improved without a corresponding improvement in the quality of the goods that they are able to produce, and it is quite evident that further improvement in their knowledge of buttermaking will not wholly solve the question of quality in the future any more than it has in the past.

Another line of effort to which considerable energy has been devoted has been the attempted education of creamery patrons by means of farmers' meetings, farmers' institutes, dairy associations, and the dairy press. Such efforts have been of very great value to the dairy industry in this state, but have brought results more along the line of cheaper methods of production and manufacture rather than in the direction of cleanliness and general improvement of the raw material and the resulting product.

It has also been seriously suggested that prosecutions by some state or other official, would be the solution of the problem. There are 552 creameries, and probably 3,000 cream buying stations in this state and more than 100,000 persons selling to them. It is quite evident that the enforcement of any such statute would require a small army of officials and such prosecutions could be directed only toward unwholesome and unclean products and not against those that were merely second or third class, but still fit for making butter. Convictions could be secured only in cases where the facts were out of the ordinary, and such prosecutions would not result in eliminating a good deal of the milk and cream from which now second and third grade butter is unavoidably made.

Efforts along the lines suggested above are extremely valuable and desirable and should not only be continued but if possible increased in volume, but the experiences of the past with these methods leads to the belief that they will in the future be inadequate in a very large degree and that some addition must be made to them if we are to make any considerable improvement in the quality of the butter manufactured in this state.

There is universal complaint on the part of good buttermakers and poor buttermakers alike, that the quality of milk and cream which comes to them has at least not shown any improvement and very likely in a good many places is less desirable than formerly. The introduction of the hand separator has changed our buttermaking in this state from 10 per cent gathered cream to 80 or 85 per cent gathered cream. The less frequent delivery of the cream has resulted in a much poorer product from patrons who always did furnish a poor quality of product and from those patrons who formerly could be depended upon to furnish a good quality of milk, now comes a quality of cream at least no better. It is quite evident that the fault lies not with the creamery management nor the buttermaker, it does not lie in any increased ignorance of the farmer, nor in any decreased activity of various persons in official capacities, but rather with the producer of the raw material. It is, therefore, logical to suppose that efforts towards improvement must be more largely directed to the farmer than they have been heretofore.

While the creameries of the west generally have not improved their quality of raw material, there are other lines of manufacture connected with the dairy industry that have succeeded in securing uniformly from their patrons a high grade of milk, milk that is clean and handled in such a manner that a high grade of product can be manufactured from it.

The condensed milk factories in various parts of the country have been uniformly successful in securing clean, sweet milk and the methods by which such character of raw material has been secured are worthy of investigation and adoption by a very large number of our creameries, and if so adopted, the food and dairy commissioner believes that the desired quality of raw material will be in most cases secured. While dairy schools and dairy authorities of every kind can be expected to render assistance, and very great assistance, in the direction of the desired result the experience of creameries, cheese factories, and condensed milk factories leads to the belief that the desired results will not be obtained except by persistent and continual effort on the part of the creamery management.

The plan pursued by the more successful condensed milk factories is as follows:

First, a formal contract between the management and the proposed patrons is entered into, which contract specifies the duties and obligations of each party to the same and upon the part of the patron who agrees to furnish milk from a definite number of cows; to provide clean barns; to care for his cows and to milk them in a cleanly manner; to use clean utensils for handling and transporting milk; and to keep the same in a clean milk house provided for that purpose, and to thoroughly cool the milk after each milking. He also agrees to permit inspection of his barns, cows, dairy utensils and appliances by representatives of the management and to take all needful pains for the production and delivery of a clean product.

Second, a system of inspection and instruction by a milk inspector employed by the factory, is persistently followed, an inspection of the milk as it arrives at the factory, and a further inspection of the dairies, cows and appliances of the patron.

From a theoretical standpoint, the foregoing plan is especially desirable and easy of adoption in any large co-operative creamery in the state. A competent person employed by the creamery to work among the patrons of the creamery would almost certainly insure a very considerable improvement in the quality of raw material furnished. The average creamery aside from the large central plants in this state, produce about 140,000 pounds of butter annually. An increase in the value of this product of a cent a pound would employ a person at $100 a month for the year, so that the expense would almost certainly be easily provided for by the increase in price received for the improved butter, and such a man could easily more than earn his salary in the assistance, advice and instruction along other dairy lines that he might give to the patrons of the creamery; or the expense might be cut into by two adjoining creameries employing a man to work among their patrons as suggested above.

A cent a pound means $1,000,000 annually to the milk and cream producers of the state. If such an increase can be secured by an expenditure of even half a million dollars, it ought to be undertaken Everybody knows and acknowledges that such an increase in the value of Iowa's creamery butter is easily possible by improving the quality of the raw product which now comes to the factories. Experience has shown that the efforts of the buttermaker so long as he is confined to the creamery by his usual duties, are not effective in most cases in improving the quality of the product sent to him. The experience of the assistant commissioners and others who habitually go among the creameries leads to the conclusion that the improvement in quality can only be secured by giving some attention to the farmer on his farm, by insisting that better practices be followed by him. Creamery patrons of this state are so numerous that it is impossible to imagine any such effort being adequately provided for by legislation at state expense. It is eminently proper that such work should devolve solely upon the creamery and the farmers to whom the direct monetary benefit is sure to go, and the commissioner urges that the successful plans adopted and followed by the condensed milk factories in other states and this state be considered seriously with a view to their adoption by numerous creameries of Iowa.

PRICES PAID FOR BUTTERFAT.

A very considerable number of complaints come to this office regarding the extremely high prices paid by various local creameries, and the allegation is made by the complainants that such high prices per pound of butterfat are only possible when cutting of tests is generally practiced. All such complaints have been carefully investigated, but in no case has there been any reasonable ground for suspicion of any irregularity in the matter of testing. As is well known, the co-operative creamery does not pay for butterfat with relation to the market on the exact day that the butterfat was received at the creamery. The prices paid by the co-operative creamery are dependent upon the prices received for the butter. For example, if the price of butter on the first day of May is thirty cents and on the tenth of May is only 25, it is quite evident that the co-operative creamery will be only able to pay on the basis of a twenty-five cent market rather than on a thirty cent market, because the butter could not get to market in time to gain the advantage of the higher price. Likewise on a rising market, the creamery will always receive more per pound than the market for the day upon which the butterfat was received, and this, by reason of the fact that approximately ten to fourteen days are necessary to ripen and churn the cream, get it to market, and sell it under present conditions. If there are cases where creameries have reduced the test in order to make the price for butterfat very high, this department has been unable to find them after a considerable effort in the way of investigating complaints of this character. In order to more fully illustrate the high prices possible to be legitimately paid by a local creamery under present conditions, there is given below a statement of the business of one of our moderate sized co-operative creameries for the butterfat received for September:

The average price of butter in New York for September was ''creamery specials'' 24 1-2 cents, and this creamery paid for butterfat 29 cents, which was a half cent more than they should have paid by reason of an error of the secretary amounting to $83.03. The secretary in making up his books for the 20th of the month was obliged to estimate receipts on the last shipments and he made his estimate too high. If he had paid 28 1-2 cents, which he could have done and had a little money left, he would still have paid 4 cents more than the average of the market for the month. Whereas the market for the twenty-five business days in September was 24 1-2, the market for the four days upon which he actually sold his butter was 25 7-8. This man sold half his butter at two cents premium and the other half at 2 1-2 cents premium—an average of 2 1-4 cents, so that he actually received for his butter an average of 28 1-8 cents. This advance of 3 5-8 cents over the market of 24 1-2 cents for September is 2 1-4 cents premium and 1 3-8 advance in the market from the time the fat was received till it was sold in New York. Further, the 2 1-4 cents premium on the butter sent to New York amounted to $418.23. The overrun of 18.7 per cent or 3,000 pounds of butter had a value of $847.50, which is more than all the expenses of the creamery added to the freight and commission.

That is to say this creamery received a price two and one quarter cents above the New York market for specials, and made one and three-eighths cents by reason of the fact that nearly two weeks elapsed from the time the butter fat arrived at the creamery until it was sold as butter in the market. The overrun more than paid all the expenses of the creamery, the freight on the butter to market and the commission for selling the same. The price paid was entirely warranted by the receipts, except the half cent error mentioned.

The following figures are not at all abnormal except by reason of the fact of the rising market and the gain occasioned by having this abnormality out of the question there is no reason why any well managed creamery making a high grade of butter may not duplicate this report and the relative prices paid any month in the year. If it does much less the management will do well to look for a leak somewhere, either in the quality of the butter and price obtained, or in the overrun secured, or in the expense bill.

REPORT OF AN IOWA CO-OPERATIVE CREAMERY FOR SEPTEMBER, 1908, BUSINESS.

Sales on		Market.	Selling Price.
September 18	78 tubs	24 c	26¼c
September 25	73 tubs	24½c	26¾c
October 5	77 tubs	27 c	29¼c
October 16	81 tubs	28 c	30¼c
	309 tubs	Av. 25⅞c	Av. 28⅛c

Total sales in New York as above:

309 tubs, net	$ 4,695.32	Freight and commission	$ 504.84
981 lbs. sold at home	272.93		
Buttermilk	26.60		
Surplus from previous month	35.10		
	$ 5,029.95		
Making expenses	308.14	See below	308.14
	$ 4,721.81		$ 812.98
Paid at 29 cents	4,804.84		
Overdrawn	$ 83.03		
Butterfat	16,568.4 lbs.	Pounds butter per tub	61.4 lbs.
Butter	19,569 lbs.	Average premium	2¼ cents
Overrun	18.7%		

Making expenses as follows:

Tubs	$ 83.72
Salt	12.00
Circles, etc.	12.00
Coal	30.00
Buttermaker	100.00
Officers	29.00
Sinking fund	41.42
	$308.14

OLEOMARGARINE.

The following table shows the production of oleomargarine for the United States for the last several years, ending in each case with June 30th. On July 1, 1902, the recent oleomargarine statute became effective and the measure of its effectiveness is shown by the rapid decrease of production. The gradual and steady increase of recent years is occasioned by the fact that makers of this article have been giving much attention to its sale and to the fact that the so-called uncolored oleomargarine nevertheless has a light yellow color and readily sells as butter.

U. S. statistics of Manufacture of Oleomargarine.

1901	104,943,856
1902	126,316,472
1903	71,804,102
1904	48,071,480
1905	49,880,982
1906	53,146,459
1907	68,988,639
1908	79,107,273

At this writing, Nov. 1, 1908, there are 110 licensed dealers in uncolored oleomargarine in Iowa and doubtless before spring there will be as many more added to this number. The statute in this state prohibits the sale of oleomargarine if it *has a yellow color.* When the first sales of uncolored oleomargarine were made in this state in 1902 the dairy commissioner began a case against the Armour Packing Co., doing business in Des Moines and there selling so-called uncolored oleomargarine. The offense alleged was that the oleomargarine had a yellow color and that such sale was contrary to the statute. The sample purchased had not been artificially colored but nevertheless had a considerable yellow color and could easily have been sold for butter to any unwary purchaser. The case was hard fought both in the district court and in the supreme court and resulted in establishing the contention of the commissioner. Under this decision the sale in this state of oleomargarine having a yellow color is prohibited, no matter whether the color arises from some artificial added color or from the color of the fats of which the article is composed. Following this decision others of similar import have been secured in other states and the manufacturers have been making grades of uncolored oleomargarine almost or quite white for sale in states where the statutes are as strict as those of Iowa. The sale of such product has been greatly urged by the manufacturers and the number of dealers has very greatly increased under their efforts.

Very little oleomargarine is sold in this state during the summer but as soon as cold weather comes and the accompanying higher price for butter then the sale of oleomargarine begins and in localities assumes considerable proportions. The licenses issued are mainly for the larger cities as will be seen by the list below, but the smaller country communities also are beginning the sale of this product.

The following shows the location of the 110 licensees on record November 1, 1908.

Burlington	3
Cedar Rapids	13
Clinton and Lyons	12
Des Moines	13
Dubuque	10
Fort Dodge	3
Independence	5
Marshallown	2
Waterloo	15

The following towns have each two dealers: Ames, Cedar Falls. Coggon, New Hartford, Manchester.

The following towns have each one dealer: Belle Plaine, Baldwin, Central City, Colesburg, Delmar, Dennison, Grundy Center, Guttenburg, Hurstville, Iowa City, Iowa Falls, Lamont, Lost Nation, Masonville, Maquoketa, Olin, Onawa, Ottumwa, Parkersburg, Seevers, Winthrop, Wyoming.

From the above list it will be seen that the sale of oleomargarine is carried on in a number of towns that have been more or less famous for their creameries and the production of butter.

The dairy inspectors and the food inspectors of this department during the last winter visited all the establishments where oleomargarine was on sale and will do so as rapidly as possible the present season. Cases were brought against several dealers and fines assessed as follows:

Gus Heinrichs	Council Bluffs
E. Bill	Council Bluffs
Niels Peerson	Council Bluffs
Frank Peterson	Council Bluffs
John Schwinn	Sioux City
Hugh Bain	Sioux City
Nelson & Niebel	Ames

Other cases are pending at Council Bluffs, Sioux City and Emmetsburg.

Under the statute of Iowa the retailer of oleomargarine must sell it for what it is, he must furnish the buyer with a printed statement that the substance is a substitute for butter and giving the name and place of business of the manufacturer, and the substance itself may 'not have a yellow color.'

The U. S. statute requires also that the retailer shall have a license for which he pays at the rate of $6 per year, and that after the package is wrapped up for delivery to the purchaser the seller shall print upon it with a rubber stamp the word OLEOMARGARINE and stating the weight of the same and his own name and business address. It is the intention of this department for the future as well as the practice in the past to insist that all these requirements shall be met by retailers of oleomargarine in this state. This department now has two dairy inspectors and six food inspectors and the force will easily call upon every licensed dealer of oleomargarine and make sure that the law is obeyed.

Persons interested in the sale of oleomargarine continue to make persistent efforts to arouse public sentiment to demand a repeal of the present oleomargarine statute of the United States. Dairymen should not forget that the makers and dealers in this product are men of unlimited means, of greatest shrewdness, that they are able to command influence of the press and of various organizations by means unknown to the general public and that they have great monetary interests at stake and will use every effort to promote their own interests. They can be successfully opposed in their efforts for repeal of the statute by the united efforts of the creamery and dairy people of the country. The National Dairy Union has in the past served the general dairy interest faithfully and well and will continue so to do in the future but this organization can not succeed unless it is well backed by every one who wishes the sale of butter and substitutes for the same to continue on a basis free from fraud. The statistics of manufacture of oleomargarine quoted at the head of the paragraph well show the effect of the present law upon the fraudulent sale of oleomargarine and the only object of the repeal of the statute is to bring about the conditions that formerly prevailed.

The following table shows the number of pounds of creamery butter manufactured in the creameries of this state for the years as given, which year ends in each case July 1.

1897	88,900,000
1898	87,704,214
1899	87,972,470
1900	84,965,062
1901	82,706,944
1902	77,885,696
1903	64,565,970
1904	70,000,000
1905	82,707,588
1906	91,202,354
1907	91,164,363
1908	101,552,063

COMPARISONS.

	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Total number of creameries and skim stations	891	954	967	994	960	919	792	691	655	596	594	[illegible]
Ownership.												
Individual	504	516	501	524	497	377	306	242	206	190	187	180
Co-operative	349	349	349	364	360	376	350	335	316	319	319	263
Stock company	37	88	116	105	102	165	135	113	132	86	87	108
State property	1	1	1	1	1	1	1	1	1	1	1	1

CITY MILK INSPECTION.

The growth of the city milk inspection in this state is indicated by the following table showing the number of permits for milk dealers issued in the years from 1896 to 1908. The years end in every case on the 4th of July:

	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Number	566	620	574	676	714	784	821	783	780	827	893	1006	1078

Cities	Pop. 1905	Inspectors
Burlington	25,318	Oscar C. Hoerr
Cedar Rapids	28,759	Dr. J. W. Griffith
Clinton	22,756	Charles B. Thomas
Council Bluffs	25,321	H. A. Lennox
Davenport	39,797	H. J. High
Des Moines	75,626	J. P. Morey
Dubuque	41,941	Dr. F. J. Kennedy
Fort Dodge	14,369	D. C. Benjamin
Keokuk	14,604	Arthur J. Anderson
Marshalltown	12,045	Dr. E. M. Singleton
Muscatine	15,087	Dr. John Tillie
Ottumwa	20,181	E. B. Hill
Sioux City	40,952	O. M. Hanson
Waterloo	18,071	Theo. Peek
Total	394,737	

The law authorizing city milk inspection under the direction of the dairy commissioner was passed about twenty years ago and was intended to cover only the question of adulteration of milk and cream by skimming or watering, a practice which was then quite prevalent. The results from inspections have demonstrated quite relatively infrequent. During the last five or six years considerable clearly that the adulteration of milk and cream in such senses are efforts have been made in the way of examining milk and cream for chemical preservatives and few such cases have been discovered, and almost no prosecutions along this line have been undertaken within the last twelve months. G. W. Andrews of Burlington, Iowa, was fined fifty dollars and costs for selling cream containing formaldehyde. It is believed that the use of chemical preservatives is extremely infrequent notwithstanding sensational newspaper articles to the contrary.

This department has neither money nor authority to inspect farms and herd barns from which milk comes to the fourteen cities named above, and hence the inspection has been restricted to sampling and examining the milk which is offered for sale on the streets and in the stores of these cities. It is possible to compel cleanly practices on the part of the last handler of the milk or cream, but all such efforts are idle and vain if the milk has been produced from diseased animals or if it has been kept in unclean cans and thereby contaminated with germs, perhaps of disease, and certainly filth. Ordinary examination of milk as it comes upon the market does not detect unwholesome contamination such as suggested above and indeed the detection of unwholesome bacteria in milk is extremely difficult and in some cases impossible even in the hands of an expert with the best of apparatus at command.

There has been no considerable improvement in the character of the milk supply in these cities during the last several years. While there are individual instances of progressive dairymen who have taken pains to make sure that their herds are free from disease and who have spent money and energy in fitting their barns for the production of clean milk, such practices have not been at all general, and very great improvement in this direction could be made by voluntary effort on the part of the dairymen. The experience of the department has been such as to lead to the belief that such improvement is not likely to occur by reason of voluntary effort especially in view of the fact that the public very generally declines to reward such efforts by increased patronage or by paying higher prices for such clean wholesome product.

During the last several years a very considerable interest has been taken by the public in the question of tuberculosis in cows, and in general the knowledge of existing conditions has been much increased during the last twelve months. For example, the Board of Control of state institutions has had the state veterinarian test all the cows that are kept in connection with the several charitable institutions of the state, and the result has shown nearly one-third of these cows to be affected with tuberculosis and they have been destroyed. It is quite reasonable to suppose that a much too large proportion of cows from which milk is sold by dairymen in the various cities and towns of the state are affected with tuberculosis. At present there is no law requiring them to be tested, there is no law requiring dairymen to make certain that their milk is from healthy cows, and only in exceptional cases has such a test been made and the affected cows elminated.

Persons competent to form judgment on the subject are almost though not quite unanimous in the belief that tuberculosis cows are a very dangerous source and means for the transmission of the disease to human beings, and such being the case it is extremely desirable from the standpoint of public health that all milk for consumption as such shall be from cows known to be free from tuberculosis. The tuberculin test is very simple and easy to apply, and repeated investigations have shown that as a means of diagnosis it is accurate more than ninety-eight times out of a hundred.

The stories of egregious blunders mad by veterinarians with this test are either not true at all or very greatly exaggerated. In the hands of a competent man the tuberculin test is almost absolutely accurate, perfectly harmless to a healthy animal and its application is quite inexpensive. The danger of transmission of this disease by means of milk is so great and the means of knowing whether the animals are free from it are so easy that it seems almost criminal not to require that milk sold at least in the cities where inspections are maintained shall be from cows free from the disease.

It is quite evident that if such requirements were made in the particular cities named above that in order that such a requirement may be enforced, that either some state or municipal office be created, for the express purpose of enforcing it. A statute of this kind will not enforce itself and it will be wholly a dead letter unless it is made some official's business to continually visit farms upon which milk is produced and to keep track of the herds and practices of the various dairymen.

It is also evident that if practices in the handling of milk on the farm and at the dairy are to be much improved, there must be some form of inspection at these dairies and some definite form of cleanliness which must be enforced upon the dairymen by an official inspector charged with this duty. The inspection now authorized by law and now carried out by this department comes far short of what it ought to be. The question of whether this inspection should be carried on by the municipalities themselves at their own expense or at the expense of the state as is now the case is a question for legislative decision but if inspection is to remain under the supervision of this department the following recommendations are made: First, that a statute be enacted requiring that milk offered for sale by city milk dealers be only from cows which have been tested and shown to be free from tuberculosis, such test to be made by the state veterinarian or under his authority and to be repeated at proper intervals. Second, that milk offered for sale by city milk dealers shall be required to be produced in clean barns, and to be handled in a cleanly fashion in every particular. Third, that authority and appropriation be given for employment of proper number of inspectors to give their time to inspecting not alone the milk as it comes upon sale in the cities, but also the barns and dairy utensils and apparatus used upon the farm to see that the statute is complied with. Fourth, that the inspector be required to score each dairy where milk is produced or store where milk is sold, in accordance with score card system adopted by the U. S. Department of Agriculture, and that the name of the dairyman and such score be published in the local newspaper for the information of the public.

If the system of local inspectors were continued and one or two general inspectors added to the force it is the belief that the production of clean, wholesome milk from healthy cows could be enforced.

On the other hand if it is deemed proper that the cities should be charged with this responsibility and expense, then it is the judgment of this department that a similar plan to that outlined above is both suitable and desirable with the municipalities. At any rate the conditions are such that additional legislation is necessary in order to insure proper sanitary inspection of milk in cities.

SHOWING AVERAGE MONTHLY PRICE OF EXTRA WESTERN CREAMERY BUTTER IN NEW YORK MARKET.

Month	Twelve months ending Nov. 1, 1898	Twelve months ending Nov. 1, 1899	Twelve months ending Nov. 1, 1900	Twelve months ending Nov. 1, 1901	Twelve months ending Nov. 1, 1902	Twelve months ending Nov. 1, 1903	Twelve months ending Nov. 1, 1904	Twelve months ending Nov. 1, 1905	Twelve months ending Nov. 1, 1906	Twelve months ending Nov. 1, 1907	Nov. 1, 1907, to Oct. 30, 1908
November	$.2325	$.2337	$.2600	$.2487	$.2412	$.2650	$.2317	$.2481	$.2350	$.2762	$.2725
December	.2290	.2160	.2720	.2540	.2510	.2920	.2423	.2688	.2480	.3164	.2887
January	.2040	.1975	.2650	.2262	.2425	.2762	.2270	.2910	.2650	.3080	.3069
February	.2042	.2100	.2500	.2250	.2862	.2600	.2517	.3218	.2709	.3254	.3233
March	.1937	.2075	.2550	.2212	.2840	.2860	.2452	.2807	.2700	.3061	.2840
April	.1980	.1962	.1960	.2099	.2825	.2725	.2284	.3008	.2188	.3069	.2855
May	.1580	.1790	.2012	.1900	.2275	.2200	.2012	.2371	.2017	.2501	.2360
June	.1687	.1881	.1950	.1925	.2195	.2160	.1803	.2049	.2022	.2360	.2329
July	.1687	.1835	.1960	.1960	.2131	.2012	.1767	.2056	.2062	.2481	.2243
August	.1860	.2000	.2100	.2050	.1990	.1940	.1793	.2111	.2257	.2488	.2285
September	.2025	.2262	.2150	.2110	.2170	.2075	.1947	.2068	.2462	.2781	.2383
October	.2235	.2400	.2190	.2200	.2362	.2100	.2095	.2184	.2611	.2915	.2673
Average value per lb. per year	$.1971	$.2065	$.2278	$.2165	$.2416	$.2417	$.2140	$.2487	$.2375	$.2826	$.2658

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE AND POUNDS SOLD TO PATRONS AND OTHERS IN IOWA SO FAR AS REPORTED BY THE CREAMERIES.

Counties	Number Reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Adair	5	228,620	3,278,236	1,078,112	26,037	24,946
Adams	3	----------	865,083	283,958	6,139	3,000
Allamakee	8	----------	7,969,667	1,987,278	24,420	52,021
Appanoose	----	----------	----------	----------	----------	----------
Audubon	9	7,003,842	3,457,378	1,502,360	60,239	17,288
Benton	4	736,204	1,194,209	411,130	3,750	947
Black Hawk	15	37,383,793	2,627,571	2,375,051	168,531	238,010
Boone	3	----------	883,243	374,644	1,948	2,364
Bremer	24	71,465,787	390,328	3,257,522	244,321	110,632
Buchanan	8	30,242,286	1,017,936	1,681,962	142,998	103,154
Buena Vista	6	96,312	3,121,377	1,001,903	14,842	12,575
Butler	18	34,330,967	2,591,260	2,177,438	154,040	70,137
Calhoun	5	1,078,596	5,488,803	1,993,668	10,139	11,307
Carroll	5	104,599	5,324,721	1,595,094	19,295	24,640
Cass	3	31,000	1,179,593	408,732	3,020	77,121
Cedar	3	----------	579,031	185,063	2,696	65,867
Cerro Gordo	4	1,284,514	4,598,770	1,568,396	14,210	114,952
Cherokee	3	38,000	1,874,312	486,764	1,460	24,650
Chickasaw	12	27,588,781	3,540,352	2,184,188	162,350	48,792
Clarke	----	----------	----------	----------	----------	----------
Clay	8	4,226,125	2,818,748	1,088,799	40,815	18,293
Clayton	11	14,505,305	8,404,028	2,900,340	71,600	57,902
Clinton	3	2,206,339	1,066,907	425,562	11,826	1,921
Crawford	1	----------	3,674,172	918,543	2,500	----------
Dallas	5	913,135	2,791,109	878,091	21,507	49,355
Davis	----	----------	----------	----------	----------	----------
Decatur	1	----------	----------	----------	----------	----------
Delaware	16	42,494,010	5,830,605	3,562,193	184,032	170,540
Des Moines	----	----------	----------	----------	----------	----------
Dickinson	5	588,989	1,789,949	573,080	26,264	25,553
Dubuque	17	17,430,702	7,615,636	2,724,024	90,291	199,203
Emmet	6	5,892,234	984,898	562,140	41,444	973
Fayette	20	52,843,116	4,335,871	3,603,990	246,927	164,774

TABLE WISHONG NUMBER POUNDS MILK RECEIVED—(CONTINUED.)

Counties	Number reporting	Pounds of milk received	Pounds of cream received	Pounds of butter made	Pounds sold to patrons	Pounds sold in Iowa
Floyd	6	1,357,073	3,217,443	867,317	40,186	43,023
Franklin	6	2,794,490	3,344,724	1,184,272	35,529	21,349
Fremont	----	------------	------------	------------	------------	------------
Greene	1	866,233	82,938	58,220	1,133	3,245
Grundy	8	13,951,869	2,851,193	1,489,263	75,225	37,832
Guthrie	7	752,786	2,946,560	1,027,135	28,048	24,750
Hamilton	4	7,652,046	1,093,625	645,233	44,958	22,301
Hancock	7	958,051	3.479,801	1,049,346	30,994	7,300
Hardin	9	2,459,788	4,708,410	1,579,699	59,493	37,955
Harrison	----	------------	------------	------------	------------	------------
Henry	----	------------	------------	------------	------------	------------
Howard	7	5,926,222	3,700,089	1,157,759	35,156	9,733
Humboldt	7	2,428,166	2,961,544	917,434	39,638	8,428
Ida	1	------------	709,799	275,660	7,029	------------
Iowa	7	7,385,132	1,023,175	563,344	51,839	10,802
Jackson	12	5,549,015	6,734,582	2,022,254	39,079	51,484
Jasper	2	1,746,943	309,220	166,658	6,718	34,188
Jefferson	3	783,650	1,210,427	404,328	7,489	44,386
Johnson	----	------------	------------	------------	------------	------------
Jones	11	13,751,599	11,535,062	4,523,402	176,151	116,140
Keokuk	1	------------	450,000	142,000	------------	------------
Kossuth	18	12,708,442	5,005,250	2,098,159	160,335	50,279
Lee	1	------------	2,114,331	816.257	------------	102,400
Linn	13	14,647,760	6,145,049	2,648,813	65,148	455,494
Louisa	----	------------	------------	------------	------------	------------
Lucas	----	------------	------------	------------	------------	------------
Lyon	1	------------	1,297,944	432,648	3,160	------------
Madison	----	------------	------------	------------	------------	------------
Mahaska	2	------------	1,464,442	383,058	------------	60,000
Marion	1	------------	549,087	221,228	------------	21,128
Marshall	4	2,033,734	2,127,510	673,902	13,286	61,112
Mills	----	------------	------------	------------	------------	------------
Mitchell	9	2,648,872	5,069,557	1,446,431	83,582	217,523
Monona	1	------------	347,693	99,341	122	203
Monroe	1	479,952	238,912	108,906	1,874	29,765
Montgomery	----	------------	------------	------------	------------	------------
Muscatine	1	5,074,215	------------	220,680	------------	------------
O'Brien	5	------------	2,709,991	969,215	13,611	70,564
Osceola	4	43,795	1,493,421	376,526	6,886	1,840
Page	1	808,250	6,600,000	2,426,233	------------	150,000
Palo Alto	14	23,272,090	2,385,983	1,746,264	185,784	50,212
Plymouth	5	49,370	2,591,944	981,469	20,119	38,011
Pocahontas	5	------------	1,158,693	400,998	21,564	512
Polk	4	1,155,400	15,533,888	4,892,577	------------	861,000
Pottawattamie	1	1,500,000	840,000	300,000	------------	300,000
Poweshiek	5	6,812	3,055,247	854,254	8,710	8,375
Ringgold	----	------------	------------	------------	------------	------------
Sac	8	48,009	2,165,375	719,835	24,415	3,288
Scott	2	543,001	878,186	304,276	250	163,152
Shelby	7	929,494	1,692,090	617,556	23,349	7,808
Sioux	6	118,777	4,212,707	1,605,787	21,098	26,725
Story	8	8,229,380	2,057,694	1,066,558	81,256	90,949
Tama	3	21,251	937,447	262,866	995	8,151
Taylor	2	------------	5,122,715	1,463,633	10,600	17,768
Union	1	------------	460,000	182,553	3,814	5,573
Van Buren	----	------------	------------	------------	------------	------------
Wapello	2	802,726	1,685,551	507,774	2,500	36,720
Warren	----	------------	------------	------------	------------	------------
Washington	1	------------	232,100	80,600	------------	------------
Wayne	1	------------	2,184,640	655,392	6,000	8,000
Webster	1	40,000	1,500,000	477,004	250	40,000
Winnebago	7	18,216,156	2,708,446	1,610,258	111,279	32,264
Winneshiek	12	------------	9,107,394	2,905,334	17,122	75,383
Woodbury	2	500,000	18,517,897	6,898,547	4,500	330,816
Worth	8	3,585,115	2,739,272	945,482	51,425	8,855
Wright	4	247,656	2,624,225	777,663	21,349	46,650
Total	501	518,786.576	269,257,066	101,552,063	3,440,689	5,546,350

TABLE SHOWING NUMBER OF HAND SEPARATORS, NUMBER OF PATRONS AND NUMBER OF COWS.

Counties	Number of creameries reporting hand separators	Received cream by rail	Hand separators reported	Number of creameries reporting patrons and cows	Number of patrons reported	Number of cows reported
Adair	5	2	1,130	5	1,150	8,230
Adams	3	--------	412	3	420	3,304
Allamakee	8	--------	1,558	8	1,794	12,833
Appanoose	--------	--------	--------	--------	--------	--------
Audubon	8	--------	1,278	9	1,448	10,941
Benton	4	--------	522	4	572	4,300
Black Hawk	11	2	755	15	1,941	17,238
Boone	3	2	550	3	572	3,330
Bremer	3	--------	101	24	1,999	19,080
Buchanan	8	--------	553	8	1,509	11,799
Buena Vista	6	2	1,104	6	1,146	9,114
Butler	14	--------	555	18	1,811	14,129
Calhoun	5	2	1,641	5	2,032	14,566
Carroll	5	2	2,198	5	2,317	16,994
Cass	3	1	622	3	662	4,173
Cedar	3	--------	163	3	172	1,325
Cerro Gordo	4	3	1,800	4	1,988	13,064
Cherokee	3	2	812	3	896	6,325
Chickasaw	9	--------	591	12	1,791	16,817
Clarke	--------	--------	--------	--------	--------	--------
Clay	8	2	977	8	1,140	7,773
Clayton	10	2	2,917	11	3,705	27,978
Clinton	3	1	296	3	374	2,945
Crawford	1	1	1,847	1	1,487	10,706
Dallas	5	3	948	5	1,106	7,837
Davis	--------	--------	--------	--------	--------	--------
Decatur	1	1	--------	--------	--------	--------
Delaware	13	1	1,512	16	2,671	22,852
Des Moines	--------	--------	--------	--------	--------	--------
Dickinson	5	1	584	5	601	4,235
Dubuque	15	3	4,541	17	6,398	46,736
Emmet	5	1	268	6	435	4,262
Fayette	9	1	835	20	2,795	24,335
Floyd	5	--------	486	6	990	6,423
Franklin	6	1	1,224	6	1,586	10,874
Fremont	--------	--------	--------	--------	--------	--------
Greene	1	--------	105	1	147	1,050
Grundy	8	2	823	8	1,296	10,761
Guthrie	7	2	1,100	7	1,307	9,430
Hamilton	4	1	439	4	803	5,872
Hancock	7	3	899	7	979	8,537
Hardin	9	1	1,390	9	1,496	10,836
Harrison	--------	--------	--------	--------	--------	--------
Henry	--------	--------	--------	--------	--------	--------
Howard	6	--------	708	7	1,267	7,980
Humboldt	7	1	940	7	1,037	8,384
Ida	1	1	219	1	219	1,586
Iowa	7	--------	395	7	719	5,182
Jackson	12	2	1,487	12	1,745	13,215
Jasper	2	--------	111	2	181	1,268
Jefferson	3	1	536	3	622	3,407
Johnson	--------	--------	--------	--------	--------	--------
Jones	11	4	3,115	11	3,384	32,652
Keokuk	1	1	55	1	140	1,008
Kossuth	17	1	1,323	18	1,784	14,047
Lee	1	1	1,200	1	1,550	10,850
Linn	12	2	2,452	13	3,185	6,718
Louisa	--------	--------	--------	--------	--------	--------
Lucas	--------	--------	--------	--------	--------	--------
Lyon	1	1	550	1	600	4,200
Madison	--------	--------	--------	--------	--------	--------
Mahaska	2	2	410	2	603	3,024
Marion	1	1	300	1	400	1,500
Marshall	3	2	607	4	867	6,074
Mills	--------	--------	--------	--------	--------	--------
Mitchell	9	--------	781	9	1,722	11,932

TABLE SHOWING NUMBER HAND SEPARATORS, ETC.—(CONTINUED.)

Counties	Number of creameries reporting hand separators	Received cream by rail	Hand separators reported	Number of creameries reporting patrons and cows	Number of patrons reported	Number of cows reported
Monona	1	1	115	1	1,119	800
Monroe	1	1	160	1	196	965
Montgomery	--------	--------	--------	--------	--------	--------
Muscatine	--------	--------	--------	1	131	1,300
O'Brien	5	2	716	5	735	5,258
Osceola	4	1	498	4	528	2,880
Page	1	1	3,000	1	3,500	17,500
Palo Alto	14	--------	704	14	1,387	11,823
Plymouth	5	2	951	5	1,019	8,307
Pocahontas	5	--------	562	5	607	3,826
Polk	4	3	7,012	4	8,768	63,129
Pottawattamie	1	1	400	1	450	3,240
Poweshiek	5	3	1,049	5	1,118	7,221
Ringgold	--------	--------	--------	--------	--------	--------
Sac	8	2	990	8	1,059	7,016
Scott	2	2	500	2	545	4,080
Shelby	7	1	883	7	902	5,848
Sioux	5	--------	2,004	6	1,542	13,449
Story	8	1	763	8	1,037	7,250
Tama	3	1	305	3	353	2,160
Taylor	2	2	1,910	2	2,010	13,472
Union	1	--------	250	1	2,040	10,150
Van Buren	--------	--------	--------	--------	--------	--------
Wapello	2	1	1,250	2	1,328	10,056
Warren	--------	--------	--------	--------	--------	--------
Washington	1	1	130	1	140	1,008
Wayne	1	1	1,200	1	1,600	11,520
Webster	1	1	1,090	1	1,148	6,000
Winnebago	6	--------	767	7	1,299	12,576
Winneshiek	12	--------	1,509	12	2,529	19,967
Woodbury	2	2	8,611	2	8,811	63,439
Worth	8	1	763	8	863	6,580
Wright	4	1	830	4	955	7,271
Total	442	97	81,706	500	108,638	792,598

TABLE SHOWING NET POUNDS OF BUTTER SHIPPED OUT OF THE STATE, AS REPORTED BY THE RAILROADS, FOR THE YEAR ENDING SEPTEMBER 30, 1908, COMPARED WITH SIMILAR STATEMENTS FOR THE YEAR ENDING SEPTEMBER 1907.

Counties	1907	1908	Increase	Decrease
Adair	973,566	1,363,748	390,182	-----------
Adams	-----------	98,639	98,639	-----------
Allamakee	1,572,193	1,618,525	43,332	-----------
Appanoose	35,868	42,051	6,183	-----------
Audubon	1,124,306	1,475,384	351,078	-----------
Benton	241,756	458,297	216,541	-----------
Black Hawk	969,073	1,032,444	62,371	-----------
Boone	115,250	201,647	86,397	-----------
Bremer	2,773,412	2,475,121	-----------	298,291
Buchanan	1,886,103	1,980,218	94,115	-----------
Buena Vista	1,128,072	1,000,624	-----------	127,448
Butler	1,722,565	2,185,260	462,695	-----------
Calhoun	1,400,018	1,642,105	242,087	-----------
Carroll	1,888,055	1,749,307	-----------	138,748
Cass	203,379	540,046	336,667	-----------
Cedar	177,725	733,708	555,983	-----------
Cerro Gordo	1,185,823	1,524,885	339,062	-----------
Cherokee	568,939	298,431	-----------	270,508
Chickasaw	2,056,017	2,105,415	49,398	-----------
Clarke	11,051	7,895	-----------	3,156
Clay	935,814	855,233	-----------	80,579
Clayton	2,418,368	3,078,268	659,900	-----------
Clinton	1,019,196	1,782,648	763,452	-----------
Crawford	942,591	1,195,398	252,807	-----------
Dallas	937,224	650,532	-----------	286,692
Davis	546	24,948	24,042	-----------
Decatur	163	528,566	528,403	-----------
Delaware	2,799,336	2,961,054	161,718	-----------
Des Moines	259,284	115,920	-----------	143,364
Dickinson	583,516	427,377	-----------	156,139
Dubuque	2,223,196	2,329,629	106,433	-----------
Emmet	771,489	570,585	-----------	200,909
Fayette	2,517,736	2,710,902	193,166	-----------
Floyd	761,792	619,237	-----------	142,555
Franklin	588,481	665,668	77,187	-----------
Fremont	5,716	6,309	593	-----------
Greene	80,352	167,477	87,125	-----------
Grundy	895,148	816,346	-----------	78,802
Guthrie	864,650	992,315	127,665	-----------
Hamilton	874,014	1,244,965	370,951	-----------
Hancock	963,934	943,241	-----------	20,693
Hardin	1,728,263	1,538,010	-----------	190,253
Harrison	26,728	38,910	12,182	-----------
Henry	38,620	52,909	14,289	-----------
Howard	794,768	1,030,964	236,196	-----------
Humboldt	684,712	683,240	-----------	1,472
Ida	277,505	240,903	-----------	37,603
Iowa	246,739	536,510	289,771	-----------
Jackson	1,592,207	2,112,726	520,519	-----------
Jasper	126,772	118,722	-----------	8,050
Jefferson	134,599	146,646	12,045	-----------
Johnson	21,679	24,612	2,933	-----------
Jones	4,630,275	5,812,705	1,182,430	-----------
Keokuk	40,305	93,563	53,258	-----------
Kossuth	1,758,215	1,654,957	-----------	103,258
Lee	3,503,813	2,105,978	-----------	1,397,905
Linn	1,607,382	1,719,490	112,108	-----------
Louisa	8,217	4,161	-----------	4,056
Lucas	-----------	20,353	20,353	-----------

Counties	1907	1908	Increase	Decrease
Lyon	523,446	596,610	73,164	
Madison	3,561	3,822	261	
Mahaska	184,541	286,981	102,440	
Marion	135,063	213,589	78,526	
Marshall	393,076	463,286	70,210	
Mills	8,355	4,082		4,273
Mitchell	1,673,441	1,447,609		225,832
Monona	231,700	200,908		30,792
Monroe	33,474	55,860	22,386	
Montgomery		7,274	7,274	
Muscatine	29,632	37,632	8,000	
O'Brien	410,898	631,038	220,140	
Osceola	312,949	493,699	180,750	
Page	644,664	743,820	99,156	
Palo Alto	1,147,832	1,290,973	143,141	
Plymouth	716,375	886,340	169,965	
Pocahontas	480,291	638,897	158,606	
Polk	4,790,804	4,122,972		667,832
Pottawattamie	5,478	949,045	943,567	
Poweshiek	274,875	450,283	175,408	
Ringgold	499	63		436
Sac	688,747	704,713	15,966	
Scott	1,577,194	1,604,414	27,220	
Shelby	504,279	604,018	99,739	
Sioux	1,845,878	1,807,686		38,192
Story	1,037,671	1,232,203	195,532	
Tama	354,755	211,248		143,507
Taylor	1,304,194	1,554,537	250,343	
Union	1,285,826	1,311,806	25,980	
Van Buren	18,390	16,574		2,816
Wapello	635,862	711,499	75,637	
Warren	945	987	42	
Washington	66,029	139,360	73,321	
Wayne	926,748	732,725		194,023
Webster	656,531	393,566		262,965
Winnebago	1,342,868	1,435,261	92,393	
Winneshiek	1,866,537	1,651,093		215,444
Woodbury	5,965,465	6,061,460	95,995	
Worth	1,325,380	966,578		458,802
Wright	1,113,957	1,150,752	36,795	
Totals	92,173,776	98,970,991	12,725,610	5,929,395
Net increase	6,796,215			

TABLE SHOWING TOTAL NET BUTTER SHIPMENTS OF THE STATE FOR THE YEARS 1890 TO 1908 INCLUSIVE, FROM IOWA TO POINTS OUTSIDE THE STATE; ALSO INCREASE OR DECREASE AS COMPARED WITH THE YEAR PRECEDING.

Years Ending October 1st.	Net pounds of butter shipped	Increase over preceding year	Decrease from preceding year
1890	71,255,796	----------	----------
1891	68,690,716	----------	2,565,080
1892	60,112,931	----------	8,577,785
1893	54,572,902	----------	5,540,029
1894	54,509,417	----------	63,485
1895	66,497,108	11,987,691	----------
1896	80,032,916	13,535,808	----------
1897	83,620,081	3,587,165	----------
1898	75,364,337	----------	6,255,744
1899	76,620,326	1,255,989	----------
1900	71,719,329	----------	4,910,997
1901	74,863,995	3,144,666	----------
1902	72,714,584	----------	2,149,411
1903	77,079,794	4,365,210	----------
1904	75,889,260	----------	1,190,534
1905	91,051,551	15,162,291	----------
1906	98,184,607	7,133,056	----------
1907	92,174,776	----------	6,009,831
1908	98,970,991	6,796,215	----------

PART IX.

EXTRACTS FROM
STATE VETERINARY SURGEON'S REPORT OF 1908.

SIXTH BIENNIAL REPORT.

PAUL O. KOTO, State Veterinary Surgeon.

INTRODUCTORY.

In compliance with the statutes directing the proceedings of this department, I submit herewith the Sixth Biennial Report for the period ending June 30, 1908.

While there have been no serious outbreaks of infectious diseases among live stock in Iowa the past term, the results accomplished during this period have been more than beneficial to the live stock interests, and adequate measures are in force to prevent epidemics of contagious diseases, as well as to protect the state at large from general infection through any diseased stock. This department has taken its place prominently among kindred departments of other states and within the precincts of the government Bureau of Animal Industry.

The establishment of an office at the Capitol, and attending benfits through close association with the state administration, have accomplished much towards placing the department in closer touch with the public interests.

Competent assistants, whose duties lie in seeking and maintaining the welfare of their respective districts, have worked harmoniously with the Veterinary Surgeon, and have always rendered invaluable aid in checking sudden outbreaks, such as occur within their jurisdiction.

Because Iowa has inadequate laws governing the shipment of disease-infected stock to points within our borders, there have been some serious lossess sustained by stock raisers. Registered and unregistered animals bought in other states and shipped to Iowa have developed such extensive cases of tuberculosis that thousands of dollars worth of stock have been lost, to the end that public safety and protection of other stock might be conserved.

By far the most important work of the department has centered about the location and eradication of tuberculosis among cattle. The life of the Iowa hog is so short that there are rare cases where infection has extended to the human family from this source, so that all efforts to eradicate the disease have been directed toward the cattle industry. Of the subject, tuberculosis, too much cannot be written, and it has been proven that, so far, educational measures as applied to published articles on tuberculosis, have stirred the people of our state to action, and more especially to sensible efforts towards destroying all possible avenues from whence this disease enters the human family. And it rests with this department to carry out a work which is the foundation of all subsequent efforts, namely, the destruction of tuberculous stock from whence the disease originates and is spread. It is not within our province to report full and comprehensively all work along this line as so far accomplished, but suffice to say that thousands of cattle found to be afflicted with tuberculosis have been either destroyed or placed in safe quarantine, and the spread, at least from these animals, checked, thus saving the state and stock raisers thousands of dollars. Tersely told, the intrinsic value of tuberculin tests made of Iowa cattle cannot be reckoned in facts and figures, for the reason that the ultimate end of infection is beyond human knowledge. Elsewhere in this report is found a comprehensive article upon the subject, including an exhaustive outline of its cause and effects.

This department has been obliged to respond to a large number of calls where infection from glanders and kindred diseases have started. As shown by articles upon this subject, much has been accomplished to, in a systematic way, prevent spread and subsequent losses through serious outbreaks. Another feature which developed new tendencies during this period is that of supplying stock shippers with certificates of health for stock consigned outside of the state. It is a fact that other states have rigid rules governing the importation of stock of all descriptions, and we have had to keep for ready reference the laws of each state bearing upon this point so that we have been able to properly advise all shippers who want the certificates. Several hundred such calls reach this department every year.

Through co-operation with the Bureau of Animal Industry in acting upon all cases of contagion throughout the United States this department has received and given reports of contagious diseases, including the locality of its origin. This has been a class of work of importance and has affixed the Iowa department in a creditable standing among similar departments of other states.

Aside from the regular work of the department, we have received and responded to many calls for papers to be read before various gatherings of farmers and stock men. This branch of educational work, while not a given duty, has had our enthusiastic support, and we believe we have accomplished a new purpose, that of bringing the agricultural interests of the state in closer touch with the department, and thereby rendering every possible aid to the actual fulfillment of the object of this office.

Concluding, we wish to call attention to the small appropriation upon which we have had to operate. There has been necessary the closest economy in every branch, and while this has not interfered with the proper work, it has in a measure effected a strong barrier to the consummation of the results we had hoped to obtain. The department and its needs have grown in the same way every other utility of the state has grown, and it is hoped that the coming legislature will increase the appropriation, so that the work may be extended to better ends during the ensuing term, and that all who are desirous of the service of this department may be accommodated in an equitable way.

TUBERCULOSIS.

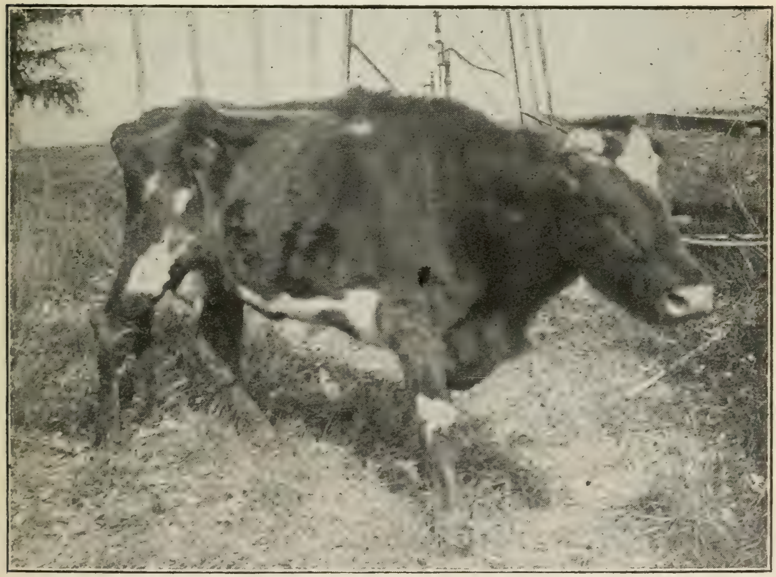
No subject emanating from medical jurisdiction is more prominently discussed today than tuberculosis. As applied to the human family much has been and is now being done to effect some relief from the widespread existence of the disease. Tubercle Bacilli, the germ from which the disease originates, has been found to gain its foothold among cattle, and in order to co-operate with those who are seeking to relieve sufferers, this department has likewise sought to destroy, in as far as our appropriation and means admit, the original source of the infection; that is, to determine the cattle affected and make disposition of them. In this effort we have had the hearty support of the medical fraternity, and the administration of the state, as well as that of the National Bureau of

Animal Industry. A corps of assistant veterinarians and government inspectors have exerted their best efforts along this line, and perhaps no greater results have been accomplished in the history of this office than that which have taken place during the past few years.

Of tuberculosis itself much has been said and written, and the subject has taken the form of a study in a class by itself, but the future offers to this department a still more important work to be done, and that lies in the testing of all cattle; weeding out those diseased and perfecting sanitary measures to prevent its existence.

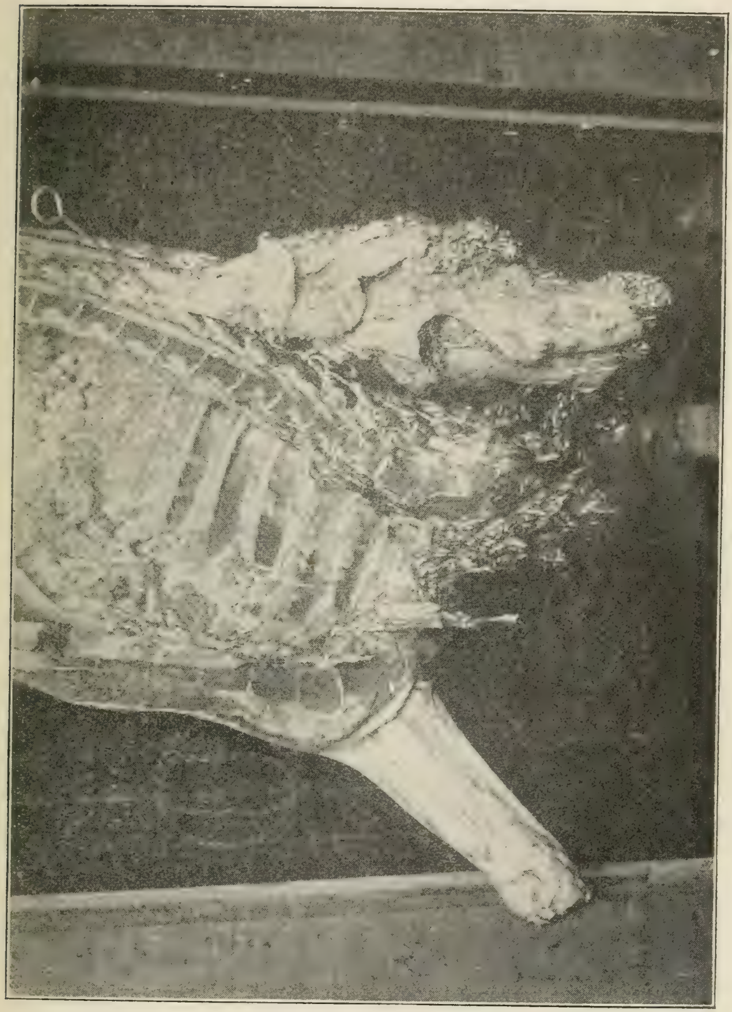
Below we reproduce a photograph of a cow from which was obtained the supply of milk for a family living near Forest City. Shortly before the picture was taken the state veterinarian was called to see this animal, and at once pronounced her condition due to an advanced stage of tuberculosis. About a year before this time a member of the family receiving the milk of this cow had died of tuberculosis. It was decided to kill this cow, and at the post mortem which was held afterward the animal was found in even worse condition than expected. In order to show the tubercular lesions, the accompanying photograph of the same cow is published also, and it may be readily seen that this is one splendid and most conclusive example of the existence of the disease, and also portrays the necessity of slaughtering such animals in order to prevent loss of human life and destruction of other stock.

Another case, and one which attracted unusual attention, was that of the herd of twenty-four cows belonging to T. J. Joseph, of Hopkinton.



No. 1. Tuberculosis Cow Near Forest City.

No. 2. Tuberculosis Cow. Post Mortum.



No. 3. Tuberculosis. Post Mortem. Hopkinton.

When tested with tuberculin twenty out of the twenty-four reacted to the test, and these were taken to the packing house at Cedar Rapids, where they were slaughtered. The post mortem gave evidence of tubercular lesions in each of the animals slaughtered, and we reproduce here a photograph of one of the animals after it had been subjected to post mortem. The tubercular lesions are present in such pronounced form as to indicate the wisdom of the test and subsequent slaughter of all diseased animals. Many other herds in the same locality were tested, and those reacting were disposed of in a similar manner.

The progress of Bovine Tuberculosis is ordinarily very slow, often taking years to destroy its victims. The period of incubation is indefinite, varying from a few days to months; but the germ once entering into the system of the patient, unless very robust, passes through the circulation and starts its destruction. It often happens that the organism passes into other parts of the body, thus producing the condition known as Generalized Tuberculosis, then two or more organs may be affected; such as the lungs in the plural cavity and the liver in the abdominal cavity. An animal in this condition of tuberculosis of a closed cavity like the pluræ may not be a source of infection to a herd for years, yet, from the migration of the germ of tuberculosis passing to other organs, especially the bowels, might become a prolific source of infection.

The chief industry of our state consists of live stock, and in attempting to eradicate tuberculosis we must pursue a course that will be of greatest benefit to all. The interests of the farmers, breeders and stock raisers, consumers of vast dairy products must all be considered. It is a difficult matter to determine to what an extent it exists among live stock in the State of Iowa, but it is safe to predict that the losses from this disease, directly and indirectly, amounts to millions of dollars. The financial losses being so great makes the eradication of tuberculosis from our live stock necessary, and the movement must be carried out as a matter of economy and as a protection to the public health.

According to the Iowa Year Book of Agriculture the number of milch cows in Iowa January 1, 1908, was 1,429,017, at an average price of $33, equals $47,157,561; stock cattle, 3,548,493, at an average price of $25, equals $78,712,325, making a total value of milch cows and stock cattle $125,869,886.

According to the estimate made by Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, the average loss from tuberculosis among milch cows will be 9¼ per cent, making a total value of $4,362,074; and the loss among stock cattle about 1 per cent, amounting to $787,123, making a total value of $5,149,197. The number of swine in Iowa is 8,366,520, at an average of $9 apiece, would make a total value of $75,295,680; and the loss among swine due to tuberculosis is estimated by the same author at 2 per cent, making a value of $1,505,973, making a total value of cattle and swine affected with tuberculosis in the state of Iowa $6,655,170 annually. Thus the loss from tuberculosis among live stock would practically amount to more than the loss from all other diseases combined; and it is estimated that one death in seven, of all the deaths in the human family, is caused by some form of tuberculosis. Hence the necessity of municipal and state measures.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, has made the following statements of the economic importance of food-producing animals:

"While the saving of human life affords the highest motive for combating tuberculosis, the prevention of financial loss is alone a sufficient reason for undertaking the eradication of the disease from farm animals.

Statistics of the United States Federal meat inspection for the fiscal year ending June 30, 1908, covering 53,973,337 animals, or more than one-half of all those slaughtered for food in the country, show the following percentages of tuberculosis: Adult cattle, 0.961; calves, 0.026; hogs, 2.049; sheep and goats, 0. The proportion of tuberculosis is probably higher in animals slaughtered without inspection.

Reports of the tuberculin test made in the 15 years from 1893 to 1908 by Federal, State and other officers with tuberculin prepared by the Bureau of Animal Industry have been carefully analyzed and tabulated. Out of the 400,000 cattle tested (mostly dairy cattle) there were 37,000 reactions or 9.25 per cent.

From these two classes of statistics, it is concluded that on an average about 10 per cent of the milch cows, 1 per cent of other cattle, and 2 per cent of the hogs in the United States are affected with tuberculosis, the average percentage for all cattle being estimated at 3.5.

The accuracy of the tuberculin test has been confirmed in a remarkable way by post mortem examinations. Out of 23,869 reacting cattle slaughtered, lesions of tuberculosis were found in 23,585, a percentage of 98.81.

The economic loss on account of tuberculosis in food-producing animals is heavy. The loss on animals in which tuberculosis is found in the Federal meat inspection is estimated at $2,382,433 annually, and if the same conditions were applied to animals slaughtered without Federal inspection, the annual loss on all animals slaughtered for food in the United States would be increased to $4,354,855. The stock of animals on hand is also depreciated in value because of tuberculosis. Assuming that living tuberculosis milch cows are annually depreciated to the extent of one-tenth of what the loss would be if they were slaughtered, other cattle one-third, and hogs one-half, the total annual depreciation amounts to $8,046,219. The annual loss from decreases in milk production is estimated at $1,150,000, and there is also some loss from impairment of breeding qualities, etc. Taking all these items into account, the aggregate annual loss because of tuberculosis among farm animals in the United States is estimated at not less than $14,000,000.

Such heavy financial losses makes the eradication of tuberculosis from farm animals very desirable purely as an economic matter. As the disease is found principally among cattle and hogs, and as most of the infection in hogs is derived from cattle, the main effort should be directed against the disease in cattle. Among the measures proposed are the following: Live stock owners should be educated by means of official publications, the agricultural and general press, lectures at farmers' institutes, etc. Authorities should make a systematic effort to determine to what extent and in what localities the disease exists, and should apply the tuberculin test generally and systematically to cattle in sections where this seems desirable. Reacting animals should be slaughtered under competent veterinary inspection, so that the loss may be minimized by passing carcasses for food where the infection is so slight that this can safely be done; dangerous carcasses, of course, to be condemned. In the case of valuable breeding animals, where slaughter would involve great sacrifice, the Bang system may be used. A system of tagging all cows sent to market is advocated, so that when animals are found tuberculous in the meat inspection, they may be traced back to the place of origin, centers of infection located, and steps taken for eradication. As the eradication of tuberculosis is largely a public health measure, it is only reasonable that the persons whose cattle are slaughtered should be paid indemnity, at least in part. This is not only just, but is absolutely essential, if the co-operation of cattle owners is to be secured. Several states already have provisions of this character.

The benefits to follow from the eradication of tuberculosis from farm animals are so great and so obvious, that the necessary expenditures, even though they must be heavy, may be regarded as a highly profitable investment."

We see what a fearful risk is being taken by the use of the meat and milk of tuberculosis animals, even if it could be shown that such meat and milk are themselves free from the living bacillus. Such reckless consumption of the products of tuberculous animals can only be looked upon as a direct means of sealing the fate of that large proportion of the community which is already slightly attacked with tuberculosis. It is often the most thrifty and least suspected in the herd that have the disease. Oftentimes there may be a large number of animals that are affected with tuberculosis, but which appear to be sound. Those, however, in an advanced stage will show that they are affected with the disease, so that a physical examination in advanced stages can usually be relied upon. When we take into consideration that this state of affairs exists, and that the consumers of most of the milk are invalids and children, what a responsibility rests upon us!

Much information has been obtained of Bovine Tuberculosis by the co-operation of the municipal, state and sanitary officers, requiring that all owners of dairy herds supplying milk to any city or town be compelled to furnish a certificate showing that all such animals have been subjected to the tuberculin test and are free from tuberculosis.

Realizing the importance of such a measure, at a meeting of the State Board in the summer of 1907, we suggested that the board recommend that all cities and towns adopt an ordinance to that effect. A copy of the suggested ordinance and the rules and regulations for the prevention and restriction of contagious diseases among domestic animals may be found in this report. Many cities and towns have adopted such an ordinance, with beneficial results. In many instances, in the inspection of such herds, a few animals have been found diseased and usually disposed of in the manner suggested by our department.

The method of immunization as a preventative measure, under the Von Behring method, is now being tried quite extensively in different parts of the world, and many encouraging reports are being made, and it is to be hoped that this immunizing agent will prove successful.

Another method of eradicating tuberculosis, and known as the Bang method, is to test all the animals in a herd, and isolate as completely as possible those reacting from those that do not, and which show no physical signs of the disease, and also isolating the calves from reacting cows and feeding them upon milk of healthy cows. This method, where tried, has been voluntary on the part of the owners. However, it has not been entirely satisfactory, mostly on account of the expense of keeping separate diseased animals from those healthy; also the ever-present risk of infection to the healthy animals.

Through the efforts of this department the enactment of a law making compulsory the pasteurization of skimmed milk has been one effective means of preventing the spread of tuberculosis among patrons of Iowa creameries.

As an example of the direct results accomplished in our department, the following report is cited: One of the assistants tested forty-three Short Horn and Jersey cattle. Of this number forty reacted—about 93 per cent. Acting upon this finding fourteen of the infected animals were immediately slaughtered at a packing house. Upon post mortem examination all revealed tubercular lesions, three were condemned and the others were placed in quarantine. The owner of this herd expects to have the remaining twenty-seven slaughtered soon, and he will also use the Bovo-vaccine method as a future preventative. One specific fact in connection with this case, and one upon which particular stress is laid, is that the owner and breeder of this stock suffered the amputation of one of his limbs because it was affected with tuberculosis. It would, therefore, be of interest to know exactly the source of inoculation; whether the method of transmission was through the owner of the stock or the reverse.

POST MORTEM TEST SHEET NO. 1.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Disposition			
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric			Food	Tallow	Offal	
1	—									P			
2	—	—	—				—			P			
3	—		—				—			P			
4	—												
5	—	—	—	—						P			
6		—	—	—						P			
7	—									P			
8	—	—	—				—					+	
9	—	—	—				—	—				+	
10							—	—		P			
11		—	—			—		—		P			
12		—	—	—	—		—	—				+	
13			—					—		P			
14			—							P			
		—	—				—			P			

In nine other herds tested by this same veterinarian, consisting of 276 head, 137 reacted, or about 49 per cent of the animals were found diseased. Nearly all of these animals were slaughtered, subject to Federal inspection, and all showed tubercular lesions.

One test consisting of forty-three head was owned by the Dubuque County Poor Farm at Julien, Iowa. Having obtained a notice from the Bureau of Animal Industry, and also from the chairman of the board of county poor farm, that tuberculosis had been discovered among swine on the premises, by request I personally visited Julien, where the county poor farm is located, and made an investigation. The herd, with the exception of a few, appeared to be in a healthy condition, but inasmuch as tuberculosis had been discovered among swine on the premises, the herd of forty-two cows and one bull were tested. The twenty animals reacting to the test, about 42 per cent, were slaughtered, all showing tubercular lesions. Seven were consigned to the tank, being diseased in a generalized condition. Of five of this number the following glands were affected: Bronchial, mediastinal, lungs, mesenteric, and liver; in others the cervical, pluræ and portal glands were affected. The premises were disinfected and the members of the county board expressed themselves as thoroughly satisfied and well pleased with the work.

TEST SHEET NO. 2.

DUBUQUE COUNTY FARM HERD.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric			Food	Tallow	Offal
—		—	—	—		—	—	—				+
41	—			—			—			P		
—		—	—	—			—			P		
30	—	—								P		
—		—	—							P		
9		—	—	—	—	—	—	—				+
—		—	—	—						P		
—		—	—	—	—	—	—	—				+
—		—	—	—	—	—	—	—				+
—		—	—	—	—	—	—	—				+
—			—	—						P		
—	*	*	*	*		*	*	*	*			+
—	—			—						P		
—			—							P		
—	—		—				—			P		
—		—	—	—			—					+
—	—	—	—							P		
—			—	—			—					
—	—	—	—	—						P		

*Generalized.

In order to show the percentage of different herds affected, the following is a partial summary of tests made by a number of the assistants: Thirty-seven herds tested, consisting of 305 head, forty-one reacted, about 14 per cent; nine herds, consisting of 215 head, fifty-seven reacted, about 26 per cent; eight herds, consisting of 280 head, fifty-four reacted, making about 26 per cent; nine herds, 176 tested, twelve reacted and eight suspicious, making a percentage of about 7 per cent diseased; four tests, consisting of sixty-three head, fifteen reacted and five were suspicious, or about 24 per cent being diseased; twenty tests, consisting of 272 head, forty-five reacted, or about 16 per cent; seven herds, eighty-one tested, thirty-eight reacted, or about 47 per cent; another test, consisting of eight herds, 148 head of cattle, of which seven reacted, making about 5 per cent. The last test, however, consisted mostly of cattle intended for export.

Another interesting test was reported to our department by a packing house in Pittsburg, Pa., stating that out of a shipment of eleven head, five were found to be diseased with tuberculosis. The shipment was traced to Halligan & Son, Moorland, Iowa. An investigation was made by our department and the dairy herd tested, consisting of fifty-eight head, out of which thirty reacted to the test, nearly 52 per cent. Nineteen of this number were immediately slaughtered at the Agar Packing Co., Des Moines, all showing tubercular lesions, six being found diseased in a generalized condition. The post mortem was conducted by the chief in charge, and witnessed by the owner, members of the board of health, the State Veterinarian and three assistants. The owner expressed himself as well pleased and thoroughly satisfied, and that the tuberculin test was absolutely reliable. He further stated that he would not have known of the existence of disease among his cattle if his attention had not been called to it by our department, inasmuch as his herd appeared to be perfectly healthy.

A similar test was conducted on the farm of Hon. C. W. Stewart, of Clive, Iowa. During the early part of last spring we received notice from the bureau stating that out of a shipment of nineteen head slaughtered at a packing house six were found diseased with tuberculosis. The bureau also notified Mr. Stewart, and he at once called upon us and expressed a desire to have his entire herd tested. Being very desirous of eradicating the disease from his premises, and as soon as convenient the herd was tested, consisting of thirty head, ten of this number reacted to the test and all were immediately slaughtered, all being found diseased, three in a generalized condition. Mr. Stewart has taken a very active interest in this work, and has written a very exhaustive report of the test, which was copied in some of the leading papers. He expressed himself as thoroughly convinced of the reliability of the test, and the need of legislation that would aid our department in carrying on this work, and, as a further safeguard to prevent a recurrence of the disease on his premises, he has decided to use the immunizing agent known as Von Behring's Bovo-vaccine.

The benefits derived by the stock breeders co-operating with our department may well be illustrated by the following example:

W. F. Wilcox, a prominent farmer and stock raiser near Marshalltown, requested a member of our department to visit his premises and test his herd of milch cows. Nine cows were tested and five reacted to the test. At the owner's request he was granted permission to keep the cows isolated until, as he thought, they would be better fitted for market. Some two or three months later we were surprised to learn that the owner had permitted these animals to mingle with the remainder of the herd. Complaint was filed by the local authorities, and upon investigation it was found that his swine were also affected with tuberculosis. While it is a difficult matter to detect tuberculosis among swine on foot, it was plainly visible, and a post mortem held on one of the hogs revealed generalized tuberculosis. The balance of the cattle were tested, consisting of thirty-two head, and twenty-five out of this number responded to the test, about 80 per cent, and were slaughtered by the Agar Packing Co., of Des Moines. All showed marked lesions, three being consigned to the tank.

TEST SHEET NO. 3.

MARSHALLTOWN HERD.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
2261		—	—	—							—		
2209	—										—		
2422							—				—		
2312											—		
2398		—					—				—		
2278			—			—	—				—		
31		—									—		
2470		—		—							—		
2303		—									—		
16	—	—									—		
2193		—	—				—	—			—		
2139		—	—								—		
32	—	—	—	—	—	—	—	—					—
2459		—	—	—		—		—					—
29			—	—							—		
2481	—						—				—		
2365		—					—				—		
2110	—	—	—	—								—	
2101	—	—		—							—		
2167	—										—		
2039	—										—		
2344	—	—	—			—					—		
2332	—										—		
2126	—		—								—		
2354	—										—		
2456	—										—		

Being convinced that tuberculosis existed to a considerable extent among cattle at the various state institutions, under the supervision of the State Board of Control, we requested permission to test the dairy herds, which was granted, and we immediately began an investigation, with results as follows:

STATE HERDS.

Postoffice	No. Tested	No. Reacted	Suspicious	Healthy
Mitchellville	28	3	3	22
Clarinda	97	3	5	89
Glenwood	106	57	--------	49
Davenport	36	--------	--------	36
Council Bluffs	31	1	--------	30
Independence	176	129	6,	41
Eldora	63	--------	1	62
Anamosa	10	--------	--------	10
Vinton	6	--------	--------	6
Iowa Tuberculosis Sanatorium, Iowa City	33	1	--------	32
Knoxville	15	--------	--------	15
Mount Pleasant	195	73	--------	122
Marshaltown, individuals supplying milk for Soldiers' Home	66	7	--------	59
	862	274	15	573

Note—Some of the above tests were completed after June 30th, but were subsequently included in the above table.

FINAL POST MORTEM, INDEPENDENCE HERD.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Tallow	Offal
2154	*	*	*								P		
2231	—		—	—							P		
2068		—		—							P		
—		—	—				—				P		
—		—									P		
—	†	†	†										—
—	†	†	†										—
—	†	†	†										—
—							—				P		
—		—	—	—							P		
—	†	†	†										—
—	*	*	*								P		
—	—	—		—							P		
—	—		—				—				P		
—	†	†	†										—
—		—	—					—			P		
—	—										P		
—	—	—	—								P		
—	—	—	—	—							P		
—	†	†	†										—
—	—	—	—				—				P		
—		—	—	—							P		
—							—				P		
—		—	—								P		
—			—	—			—				P		
—	‡	‡	‡										
—	—	—	—	—							P		
—	—			—			—				P		
—	†	†	†										—
—		—	—	—				—	§				—
—		—	—								P		
—	†	†	†										—
—		—	—	—				—			P	Bull	
—	—	—	—				—				P		
—	—										P		

FINAL POST MORTUM, INDEPENDENCE HERD—CONTINUED.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
—		—	—				—				P		
—		—	—	—			—				P		
—	†	†	†										—
—	—						—				P		
—	‡	—	‡	—		—	—	—					—
—	†	†	†										—
—							—	—			P		
2326							—				P		
2080		—	—					—			P		
2187	—												
2428		—	—	—				—	§				—
2066								—			P		
2112	—										P		
2347		—	—	—							P		
2236	—	—	—	—			—						—
2485		—	—	—			—				P		
286			—	—			—				P		
2156	—	—	—	—							P		
2145		—	—	—			—				P		
2234	†	†	†										—
219	—	—	—	—							P		
2479	†	†	†										—
287	†	†	†										—
2249	†	†	†										—
50	†	†	†										—
128		—									P		
206	—	—									P		
—	†	†	†										—
—	—	—	—	—							P		
—							—				P		
—		—						—			P		
—	—										P		
—		—	—								P		
2448	†	†	†										—
2463	†	†	†										—
—				—			—				P		
—		—	—								P		
2100	*	*	*								P		
—		—	—	—			—	§					—
—		—	—	—							P		
—	—					—	—				P		
2103	—						—				P		
2278		—									P		
2306	—	—	—	—			—						—
2336		—	—	—			—	—					—
2363	*	*	*								P		
2440	†	†	†										—
2415		—	—	—	—	—	—						—
—		—	—	—			—				P		
2127	—	—	—	—							P		
2358			—								P		
2219	*	*	*								P		
2210	†	†	†										—
2408	†	†	†										—
35		—		—							P		
2190		—									P		
141	†	†	†										—
2195		—	—	—							P		
221	—										P		
2308			—	—							P		
2074	†	†	†										—
300		-						—			P		
2373	†	†	†								P		—
299			—								P		
2177	—	—									P		
220		—	—	—							P		

FINAL POST MORTEM, INDEPENDENCE HERD—CONTINUED.

Tag Number	Glands					Glands					Disposition		
	Cervical	Bronchial	Mediastinal	Lungs	Pleura	Portal	Mesenteric	Liver	Spleen		Food	Tallow	Offal
2276	†	†	†										—
2500	†	†	†										—
2058	†	†	†										—
2388	†	†	†										—
2038	†	†	†										—
2301	—		—				—				P		
713		—	—								P		
15		—	—	—							—		
17		*	*	*							P		
19		—	—	—							P		
21		—	—	—							P		
23	†	†	†										
23	†	†	†								P		+
25		—									P		
27		—									P		
29	—	—	—								P		
31		—	—	—									+
33	—	†	†	†							P		+
35		—	—								P		
37								-			P		
39	†	†	†										+
41				—							P		
43		—	—	—							P		
45	*	*	*								P		
47	—	—	—					—			P		
49		—	—	—				—					+
51	—										P		
53		—									P		
55						—	—	—			P		
57	†	†	†					—					+
59			—	—							P		
61	†	†	†										+
63		—	—	—			—				P		

†General tuberculosis.
‡Excessive tuberculosis.
§Emaciated.

The number of cattle tested by our department at the various institutions was 796 head, of which 267 reacted to the test, being a fraction under 34 per cent. There were also fifteen head suspicious, which added to the 267 reacting, makes a total of 282 head, being about 35.5 per cent. Sixty-six head owned by individuals supplying milk to the inmates of the Soldiers' Home at Marshalltown were tested, seven of this number reacted to the test, about 11 per cent. All animals reacting to the test showed tubercular lesions, and some of the suspicious animals were found diseased, a great many in an advanced stage. Out of the 135 cattle slaughtered from the Independence herd, including those suspicious, forty-seven were tanked, making a fraction under 34 per cent of those slaughtered. Among this number was one cow with extensive lesions, of which we have preserved a specimen, as shown in the following picture.

Of the 195 head tested at Mt. Pleasant, seventy-three reacted to the test, about 39 per cent. Seventeen was found diseased in a generalized condition, making about 23 per cent of the animals slaughtered.

The following cuts show post mortem results on the Independence herd after the diseased animals had been slaughtered at Cedar Rapids. This post mortem was witnessed by members of the State Board of Control and others interested in the test.

The first picture shows a number of the animals after post mortem and ready for disposal. The latter gives a closer view of the tubercular lesions as existing in each of them.

Experiments have proven that milk from a tubercular udder fed to calves has produced the disease in from one to ninety days. We also find that in Iowa the largest percentage of tubercular swine come from districts where the cattle are diseased, the infection coming through the fæces, milk or dead carcasses, for example: A case came under our observation where a cow had died from tuberculosis. The carcass was drawn into the swine pen, giving the swine free access to the internal organs. The drove of swine were seventy-two in number, and were sold in about ninety days to a packing house where federal inspection was maintained. Upon being slaughtered every animal showed tubercular lesions, and twenty-two were consigned to the tank.

Animals very rarely become diseased without coming in contact with infected ones, or by eating and drinking from the same boxes or troughs. It has also been demonstrated that tubercular mothers very rarely give birth to tubercular offspring. Almost every example proves conclusively that the greatest method of infection is through the digestive tract.

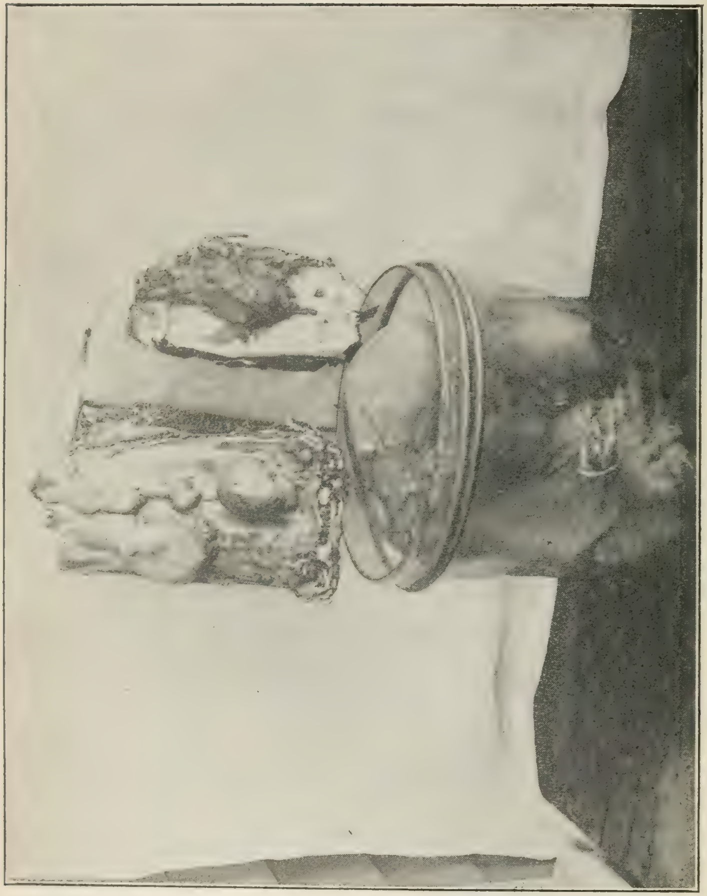
Dr. H. E. Talbot, Assistant State Veterinarian, has compiled a report of intense interest, dealing with the testing of one thousand cattle, the animals being an average, and neither under suspicion nor within reach, so far as known, of the infection. Of this number, 306, or 30 3-5 per cent reacted, and 61 per cent of the entire herds were suspected cases. The 306 animals found reacting were condemned, and were slaughtered under federal inspection, but one of the number being found free from tubercular lesions. There were seventy-six of the slaughtered animals put in tankage as unfit for use.

While this report of 1,000 animals comprises but approximately one-fourth of the number tested by us during 1908, this number has been sufficient to establish beyond any question of doubt the reliability of the tuberculin test.

We have experimented with tuberculin upon animals having previously reacted to the test, and infected with tuberculosis, for the purpose of determining how often cattle would react. We will give one experiment, using the owner's name by his permission:

W. F. Parks, Indianola, Iowa; dates, February 5 and 6, 1908; number tested, twenty-five, all being pure bred Short Horns; number reacting, thirteen. Of this number six were immediately slaughtered, the remaining seven being allowed to stay on the premises for the purpose or saving their calves. We were unable to give the exact dates of the subsequent tests, but can give them very closely. In about ninety days (May 1st) these seven cows were retested, only five reacting, no attention whatever being paid to advanced pregnancy, the majority of them having calved. One animal, however, which was due to calf in about ten days, failed to react.

No. 4. Tuberculosis. Independence Herd.



No. 5. Tucerculosis. From Independence Herd.

About sixty days later (July 1st) they were tested for the third time, at that time all having reacted, when four of the seven failed to react.

Some time later they were tested for the fourth time, five reacting, but during these four tests there were two which failed to react after the first test.

Still later the seven cows were slaughtered at the Agar Packing Co. plant in Des Moines, Iowa, and all showed advanced tuberculosis, two of the seven being consigned to the tank.

However, we do believe repeated tests to be of vital importance to the non-reacting animals at any time from six to twelve months, as tuberculin will not always give a reaction during the period of incubation or where the disease has been arrested. The same is also true of advanced stages of the disease, so that the records of tested herds do not always point out all of the infected ones, as the ones recently infected, or those in the advanced stages, may not react until the disease becomes active. In order to eliminate the disease entirely from a herd repeated tests are necessary.

Where tuberculosis has been known to reappear in a herd, after the reactors have been slaughtered, both the owner and the public are prone to place the blame upon the veterinarian or to question the reliability of the test, when in fact the owner himself is to blame for this failure to have them retested. It is therefore quite important that the owner be advised by his veterinarian as to the necessity of subsequent testing, thereby relieving himself of the responsibility should the disease recur.

Cattle reacting to the tuberculin test should be disposed of in the following manners: (1) Total destruction; (2) slaughtered at abattoirs under proper inspection; (3) isolated for breeding purposes according to the Bang method.

The veterinarian must in all cases keep a record of animals tested, date of testing, owner's name, number reacting, and the disposition of all reactors, if possible.

Among the several thousand animals which have been tested during the past season there was no herd in which so great an amount of interest was taken as that of a state herd at Glenwood, and there were several reasons for this unusual interest, the first and greatest being that it was the most beautiful, typical dairy herd of Holsteins that it has ever been our pleasure to test. There were 106, practically all Holsteins, and of all ages, and were tested April 21 and 22, 1908. Of this number there were fifty-seven reactors, almost 54 per cent, and this was not considered a suspected herd.

Elsewhere in this report is given a brief summary of a proposed ordinance which should be adopted by every city and town in Iowa. This ordinance provides for the testing of all dairy cattle, and especially the cows from which the city milk supply is taken. Many Iowa cities and towns have adopted the suggestion and the results have been most gratifying. As an example we have a report from a town in northern Iowa, where inspection is in force. The local veterinarian while inspecting some cattle which had been slaughtered for beef purposes found tubercular lesions very pronounced. Other parties who refused to comply with the ordinance were prosecuted. At the preliminary trial, a fine of $25 was

No. 6. Tuberculosis. Found by Milk Inspection.

imposed by the mayor, and the case was taken to the district court where the verdict for the city was sustained. We reproduce here a cut showing one of the animals slaughtered and the tubercular lesions are shown to be so prominent that it leaves no question of doubt as to the importance of maintaining such inspection, wherever meat and milk are sold to the city trade.

THE FENCE OR THE AMBULANCE.

In a well populated district of one of our western states there is a cliff, over which thousands of people pass daily. Some are unaware of the close proximity of the cliff to their pathway, and when passing along make a misstep and are precipitated to the street far below.

The people wanted some remedy for the danger. Some argued for a fence and some for an ambulance. The latter method prevailed. An ambulance, then, was required to carry the injured to a hospital, and the expense was allowed to accrue, not to mention the loss of life and limb which continued.

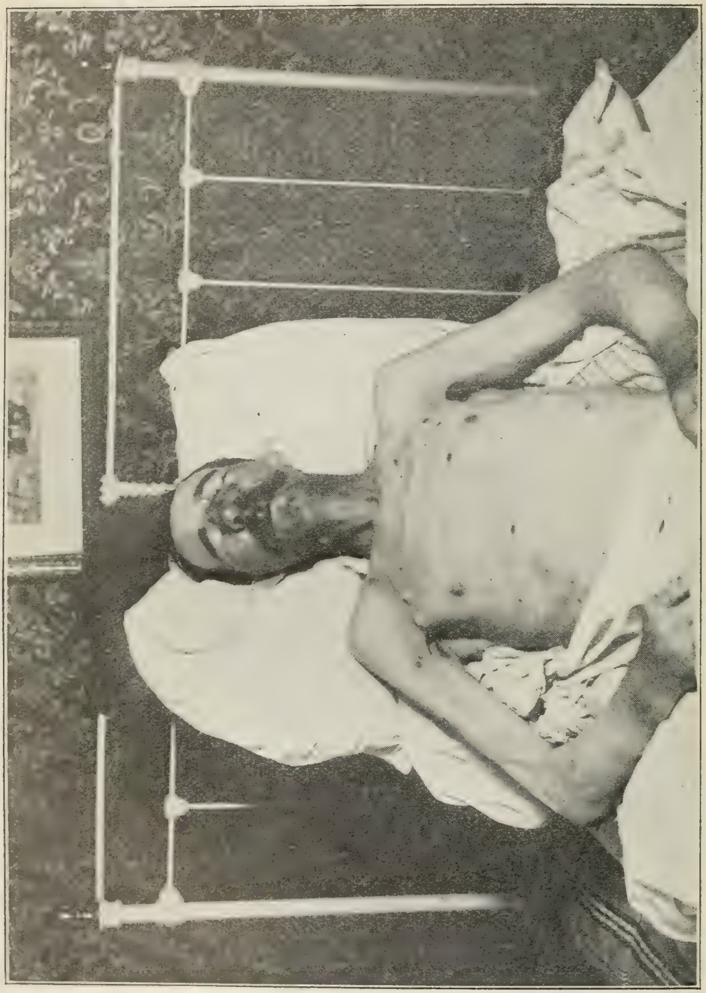
Finally the accidents grew so numerous and the expense so heavy that the ambulance became a burden in place of a remedy—and then a fence was built. There were no more accidents. The ambulance was removed, and the hospital closed. And there was no more suffering. The needs to combat the dangerous cliff were satisfied.

Why not apply the same principle to the treatment of tuberculosis? Let us build a system of prevention by destroying its origin among stock. The hospital and its varying attending avenues of taking care of the afflicted would then be useless—in time. Human suffering and heavy cost would be lessened and in keeping with this advanced stage of civilization. The expense would be small, and equality of misfortune in diseased stock would prevail.

GLANDERS.

We have to report quite a number of cases of glanders among horses and mules in this state, the disease having originated and existed in many different sections of the state at various intervals. We have given special attention to calls in suppressing the disease or preventing its spread, and although having accomplished good results, the losses have been extensive in some cases. Outbreaks of this disease have occurred in the following counties: Black Hawk, Buena Vista, Butler, Clinton, Chickasaw, Crawford, Cerro Gordo, Carroll, Dallas, Dubuque, Franklin, Greene, Hardin, Harrison, Hamilton, Iowa, Lyon, Lucas, Madison, Mitchell, Poweshiek, Pottawattamie, Polk, Pocahontas, Ringgold, Story, Shelby, Tama, Woodbury, Worth, Wright and Washington.

One case in particular which commanded urgent action came from Ames, where a contractor had set up winter quarters. He had shipped into Iowa from South Dakota, and glanders was discovered among these animals. Out of a herd of nineteen tested, fourteen reacted, and were destroyed, eight had died previous to the test. We were compelled to order the destruction of all others found diseased. It required rigid en-



No. 7. Glanders in Man at Clinton, Iowa.

forcement of quarantine regulations, however, to keep the disease within the herd. It is believed the disease was taken from among other stock in South Dakota.

Shortly after the above outbreak, another case was reported from Nevada, where a herd of horses and mules were found afflicted with the disease. Fifty-eight horses and mules were immediately quarantined, and several of them died or were destroyed. After making the proper tests, and finding that subsequent developments indicated the quarantined animals were not affected, they were released from quarantine.

Another call in May of 1907, from New Liberty, Iowa, developed five diseased out of a herd of thirty-two, and these were destroyed.

During the spring of 1907, an outbreak occurred near Kellerton, which was traced to a carload of western horses sold to various farmers in that vicinity. The disease was found to exist at seven different farms, and more than a dozen horses and mules were destroyed or died from the effects of this disease. One interesting feature of this case was, that from this shipment of western horses, another and more severe outbreak occurred near Cummings, where one farmer lost fourteen head of horses and mules. At the time our attestion was called to these cases, four of the animals had died from the disease. Twelve head were tested, ten reacting to the test. Seven of this number showing symptoms were promptly destroyed by the owner. The other three were isolated and kept in quarantine, and in about ninety days the disease developed and they were destroyed. The owner deserves a great deal of credit for generous and prompt action in destroying all animals found diseased, and thoroughly disinfecting the premises to prevent further spread. He kept over one hundred horses on his farm, and through his hearty cooperation no further evidence of the disease has developed.

During the early part of April, 1907, and prior to this time, we received calls from Clinton where several cases of glanders were reported. Investigations had developed no less than 26 cases of the disease, and among them were the horses used by the Clinton Transfer Company. An effective system of quarantine operative for a period of about two years, finally resulted in completely destroying all existence or trace of the disease.

But the most distressing result of this outbreak was the death of Thomas Farrel, aged 35, who was a driver for the transfer company, and had contracted the disease from horses he had driven and cared for. So seldom does it occur that glanders has been transmitted from animal to man, that this was a case which required the most careful consideration. During Mr. Farrel's sickness, and in the month of July, 1907, the time of his demise, it became known for the first time that he had been exposed to the disease through attending horses which were known to have had glanders. We were called upon then for our co-operation in determining exactly the nature of Mr. Farrel's sickness. The disease first made its appearance about the head and shoulders of the patient, thence it developed into pimples or pustules, showing in the glands and throat. There were symptoms at that time of malaria or septic poisoning. Associating the symptoms of Mr. Farrell with those of the diseased horses, it was found that the similarity justified further diagnosis. Microscopical and bacteriological examinations confirmed this similarity, and the mallein and agglutinations test applied to three horses showing typical symptoms, proved beyond a doubt that the disease was glanders. We watched subsequent developmests and by means of further microscopical examinations, concluded that Mr. Farrell had suffered and died of glanders, as transmitted to him by the diseased horses he had attended.

Just after Mr. Farrell's demise, we secured the photograph shown on the opposite page, and the result of glanders, in the human form, may readily be seen.

HOG CHOLERA.

With the exception of the past two years, we have had less cholera than in any former period. The heaviest losses sustained thoughout this country, occurred several years ago. Quarantine methods and regulations to keep under control the existence of any outbreak, have been the only way and means of preventing losses.

Possibly the most prominent avenues from which cholera is known to originate and spread, is through improper disposition of dead hogs. Birds are known to carry infection from one place to another, after having been around an animal which has succumbed to the disease. It is also believed that droppings from railway cars, or contagion beginning at public sales or markets, fairs, etc., have had to do with spreading the disease.

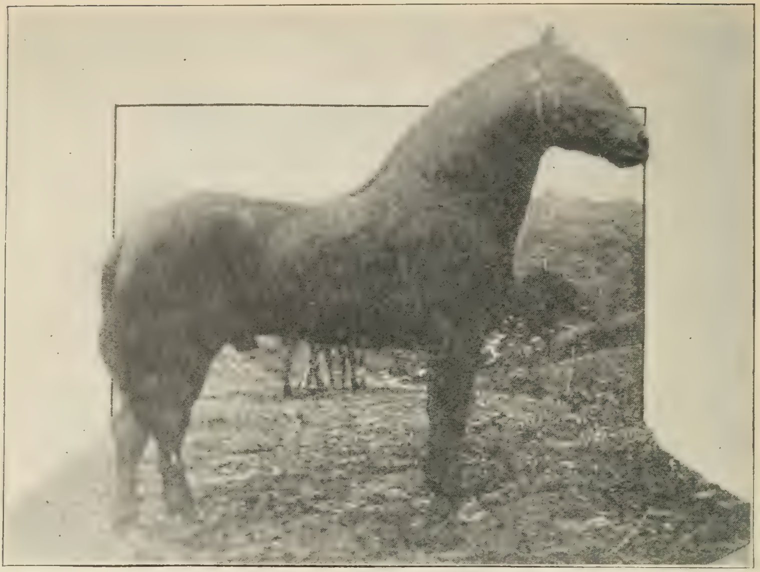
One gratifying report we have to make as related to our swine industry is that we have had very few cases of contagion reported among stock shipped to any state or county fair for exhibition purposes. When we take into consideration the fact that Iowa has had as many 3,100 hogs on exhibition at our State Fair, and also the fact that Iowa is the largest hog raising state in the Union, we have a right to expect more or less contagion. It is true that the other states seldom have more than 1,000 hogs exhibited at one time, and yet these states have rigid rules and regulations to prevent the importation of any stock for exhibition purposes to their state fair. Some of our stock men were much concerned last year over the possibility of being barred from outside exhibitions on account of contagion among swine, but fortunately this has never occurred, and it is partly due to the careful manner in which these animals are cared for and protected from infection. At the last session of the legislature, in order to identify the township and county health organizations with their due responsibilities, included in connection with other laws enacted, the duty of local boards of health to take action wherever and whenever they were informed of any contagious disease among domestic animals in their locality, and to co-operate with the state veterinarian and serve him with notice of such disease promptly upon its discovery. This not only applied to hog cholera, but to all other infectious diseases among live stock. While this regulation has not been fully complied with, it is true that there have been a large number of important calls come to this department through this means. We have appreciated the immediate attention given by many of these boards, and cannot too strongly urge others to follow their example, in order that public safety of live stock may better be conserved.

While the cholera has worked disastrous results among the hogs, it has been under constant surveillance and at least one remedy has been found after years of study, which it is believed will relieve the conditions, and eventually immunize hogs from taking it. Dr. W. B. Niles, co-operating with the government Bureau of Animal Industry, has experimented with what is known as hog cholera serum. The Bureau of Animal Industry has taken an active interest in the experiments, until now this serum has been practically adopted by the bureau as official. It is hoped that Iowa will follow the example of other states in providing for the manufacture or preparation of this serum after this formula, so that farmers and stock raisers of Iowa may obtain much needed benefit from its application to their herds.

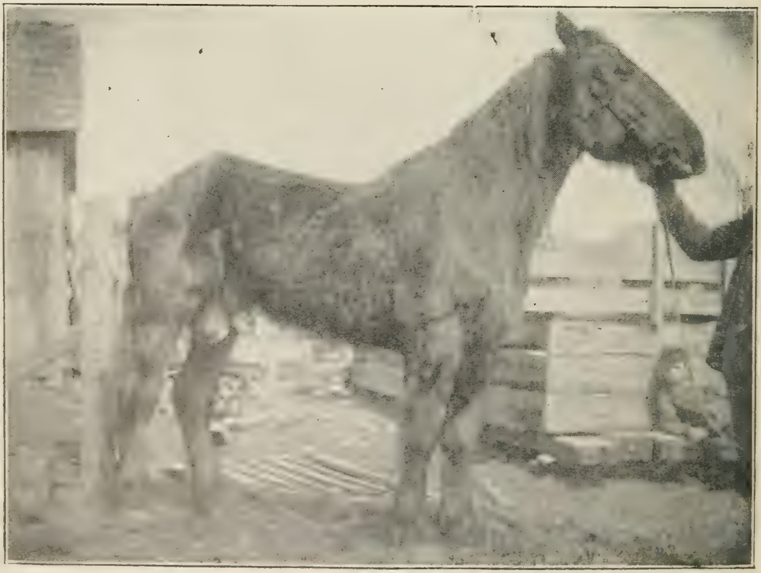
MALADIE-DU-COIT.

Perhaps the most interesting and yet serious case coming to this department, and related to the horse, has been that of Maladie-Du-Coit, which originated in Van Buren county. It has been fully determined that this disease, while of very rare occurrence, was one of the most destructive known to veterinary science. In this case, the malady originated in a thoroughbred stallion, bought by a company of seventeen farmers in Van Buren county, and this animal came from Columbus, Ohio, having been shipped under proper authority, as at the time, being free from disease. The price paid for this horse was $3,000. Following is a photograph of the horse known as Marquis.

Some time after this horse was put into service by farmers, and during the latter part of the season, he developed symptoms of the disease, which was only in its incipiency when pronounced by the writer to be Maladie-Du-Coit, and stringent measures to prevent its spread were put in force at once. Later through co-operation of the Bureau of Animal Industry, this horse was shipped to Washington, D. C., with two mares, which were suffering from the same trouble. Our diagnosis was not only verified, but proved the occasion of one of the most interesting cases they had had. Subsequent action, almost brought about the quarantine of Iowa against the shipment of horses, but through the destruction of all other affected animals in Van Buren county, such measure was prevented. In all, 173 mares and five stallions were placed in quarantine, and about twenty head of mares were killed, the state paying for three of them and the government paying owners for the others. This practically ended the existence of Maladie-Du-Coit in Iowa. Following is another photograph showing the horse while he was in an advanced stage of the disease, and by comparison with the first picture, it may be seen the disastrous effect produced by this disease.



No. 10. Maaldia-Du-Coit.
Van Buren County.



No. 11. Maladie-Du-Coit.
Same Animal After Diseae Had Developed.

OUR RELATION TO KINDRED DEPARTMENTS OF OTHER STATES.

The Department of the State Veterinary Surgeon of Iowa, has, during the past three years, affiliated closely with similar department of other states. Reports of all contagious and infectious diseases existing among live stock, have been forwarded to this office from time to time, promptly, as such diseases originated. We have, therefore, kept in close touch with existing conditions in other localities.

While there have been few infectious diseases transmitted to the State of Iowa through shipping stock, we believe that the precautions here stated, have prevented any such movement on the part of owners of such animals, and it is a well known fact that Iowa is not a dumping ground for undesirable live stock.

In accordance with section 5028-j, chapter 14, we have caused to be issued to purchasers of stock residing with the State of Iowa a certificate proving that all stock imported into this state, are free from infectious diseases. This is commonly known as a health certificate and permit for the shipment of cattle for dairy or breeding purposes, and applies only to registered cattle or cattle eligible to registration. There have been a large number of such certificates received by this department.

In this connection, we find but one draw-back to the plan of receiving such certificates. There have been some cases under suspicion where tuberculosis is at issue, and we believe that stock have had the tuberculin test one or more times, and finally become immune to the test, so that when passing before the inspector ready for shipment, the tuberculin test dces not develop the actual conditions of such animals. In such cases, we have made tests which have developed tuberculosis in such cattle passing inspection, and they have been slaughtered, and the fact that these cattle were registered and were high priced stock, has been a heavy burden of loss to such purchaser, and for this reason, the certificate described above, has become a matter of utmost importance as a protective measure to breeders of high grade stock. On the other hand, the department issues a certificate upon the same plan. These certificates, and so far as our knowledge extends, prove of the utmost value to shippers of live stock to Iowa; and they have been subjected to the closest scrutiny of the officials examining them at the point of delivery.

The expense of this inspection and issuance of this certificate is borne by the shipper.

REPORTS FROM PACKING HOUSES.

In each of the larger packing houses located within the State of Iowa, the government maintains an inspector whose duty it is to pass upon the condition of stock received for slaughter after post mortem. These inspectors in turn, send to this department a memorandum of final post mortem examinations, showing the nature and condition of disease, if any, of live stock so slaughtered; also giving the location from which such stock is received. Through this means as applied to inter-state shipments of cattle, we have been in close touch with the conditions existing among practically all the live stock offered for sale to the packing house.

We have also traced back tuberculous conditions to localities where they were least suspected, and after examination, have found we were justified in making the tuberculin test, and preventing through quarantine measures, any further spread of the disease. The reports above referred to are filed in this office and under constant surveillance, so that in the event that they are of a serious nature, we are able to prevent outbreaks of any other surrounding stock. We have been favored with the co-operation of the management of packing houses, owners of shipping stock and shippers in suppressing any spread of disease, and also, in disinfecting premises and stock cars where disease is known to have existed.

THE BUREAU OF ANIMAL INDUSTRY.

There is no wider range of identification of the live stock interests of this country, than that originating through the Bureau of Animal Industry. An efficient corps of inspectors under the management of a chief inspector at Washington, is always in close touch with the stock shipments originating throughout the United States. Iowa has had no small part of shipments to eastern markets. The inspector at such points or yards, where the Iowa cattle are unloaded, also makes a thorough investigation of their condition, and we have had but few reports derogatory to the welfare of our cattle shipping interests.

The Bureau of Animal Industry file with this department a list of the names and addresses of all Iowa shippers, number of animals shipped, points of destination, and finally, the last post mortem reports on such animals. These reports originating in Washington, and forwarded under the authority of the chief of the inspection division, are on file in this office.

During the past three years, there have been few other diseases outside of tuberculosis and scabies reported, and these were found to be of an incipient form only. The Bureau of Animal Industry also have supervision over the inter-state shipments, and the shipment of breeding and dairy cattle into other states. There is a stringent law prohibiting the shipment of infected stock and this law is enforced, inasfar as the jurisdiction of the inspectors will admit. We have had cases where an effort has been made to ship diseased stock from Iowa into other states, and through the Bureau of Animal Industry we have learned of this effort, and prevented such violation of the law. In this connection, we also received through a joint circular issued by the Western Trunk Line Committee of Chicago, information as to the quarantine rules and regulations applied to state and inter-state traffic, and under supervision of the railway company's transporting stock; also governing the location of unloading or feeding points upon the route or any cross-country shipments. Such unloading or feeding pens are subject to disinfection, etc., to prevent the existence or spread of any disease.

These reports are kept on file in this office for reference at any time.

FEDERAL MEAT INSPECTION.

DR. G. A. JOHNSON.

According to the English statistics, the people of the United States are the largest meat eaters of the world, with the possible exceptions of the Australians. It is probable that we now consume an average of about 125 pounds of meat annually for each person, young or old, of the United States proper. Taking into consideration the fact that such a vast amount of meat is being annually consumed for food together with the absolute knowledge that a number of diseases are communicable form the lower animals to man. should make it patent to all that the health of our people demands that its meat supply should be clean and wholesome and free from diseases.

On the other hand, it will be readily understood that any unnecessary demands that would materially interfere with the live stock industry, would be felt to a greater or lesser degree throughout our vast business system; because the live stock industry is not only one of the largest of the country, but it is also intimately connected with such industries as the packing houses, the stock yards, the railroads and agriculture. With this information before us, it must be evident to all, that to formulate and carry into effect any set of regulations relative to the inspection of the meat products of the country that will accord reasonable protection for the consumer on the one hand, and that will not, on the other hand, be burdensome to any of the allied industries, is a problem of vast magnitude and importance. But we are now in a position to state that this has been accomplished in a large measure by the system of federal inspection now in vogue in this country. And, notwithstanding the fact that the primary object of this inspection was to protect our export trade, it has under the wise direction of Dr. D. E. Salmon, ex-chief of the Bureau of Animal Industry, been gradually enlarged and perfected so that now it includes a large proportion, but not all of the meat products used in this country.

Owing to the fact that the federal government has no legal authority to make regulations that interfere with the matters of state within the state, it has no authority to inspect any meats except such as are offered for interstate or export trade. Consequently, no slaughter house is supposed to have federal inspection that does not do an interstate or export business, but many, in fact most of the packing houses, do more or less local trade, as well as interstate and export business. At first, the packers thought that by taking advantage of the law, they could get all the benefits of the inspection for their interstate and export trade, and at the same time, escape the loss of the condemned carcasses by stating that all such carcasses were intended for local trade; but it was found impractical, if not impossible, for the inspectors in the large packing houses to keep the carcasses that were slaughtered for local trade separate from those slaughtered for the interstate and export trade. So in order to obviate the difficulty and also to relieve the state of the burden of looking after the diseased carcasses that might be rejected from interstate and export trade, the Secretary of Agriculture early adopted the plan of making each firm enter into an agreement, to abide by the rules and regulations and to tank all diseased meats that are condemned by the inspectors before he grants them inspection, and should they refuse to stand by this agreement, he could take the inspection away from them. By this method, the chances for a conflict between the packers and inspector, and the federal and state inspectors, is greatly lessened and the local patrons of these houses get meats that are inspected the same as those for interstate and export trade.

From a sanitary standpoint, the meat products from the large packing houses where federal inspectoins are maintained, are more wholesale than are the meats slaughtered in the smaller houses where no inspection is maintained, because, where there is no inspection, the butcher will seldom tank a whole carcass, but usually he will trim off the diseased parts and sell the remainder. The fact that the federal government maintains a system of inspection at the larger live stock centers, adds rather than detracts from the reasons why local communities should maintain inspection at their local slaughter houses; because the tendency is for those who know that their stock is diseased to try to sell it at home and often they will sell at a very low figure rather than ship it to the stock yards where there is inspection and take the chances of having it condemned. For this reason, many diseased animals find their way to the slaughter house of the local butcher, who, because there is so inspector present to watch him, can remove the diseased parts and sell the remainder as good wholesome meat to the unsuspecting public.

Having thus given a somewhat general discussion of the reason why meats should be inspected and the objects to be obtained, we will now take up the discussion of how the work is done.

In the first place, there are at least two inspections of every animal—the first of the animal while alive, which is known as the ante-mortem. This is made at the stock yards, or where there are no public yards, in the pens of the packing house where the animal is killed. This ante-mortem inspection is for two purposes. First, to note such animals as show symptoms of such diseases as actinomycosis, lumpy jaw, hog cholera, etc. These animals are tagged or marked, asd a notice is sent to the inspector in the slaughter house, so that the symptoms that they present alive, may be considered when the final inspection is made of the carcass. The second purpose is to learn if they are affected with any contagious disease that is of sufficient importance to demand attention, such as sheep or cattle scab, hog cholera, etc.

It will be readily understood that the inspection at our large public yards, where many animals are received from various parts of the country to be sold and re-shipped to other parts, is of great importance, not so much from the point of wholesome meats, but more especially to the stock industry because of the check it forms to the carrying of contagious diseases from one section of the country to others, some of which might be of considerable distances.

By the system now in vogue, all stock arriving at yards where inspection is maintained, is inspected at the dock as the animals are unloaded; or in case they have been unloaded in the night, they are inspected in the pens before they are sold; and any lots that present symptoms of such diseases as scab, cholera, etc., are held for final disposition according to the regulations of the Secretary of Agriculture.

These regulations are formulated for the purpose of preventing the spread of disease, and consequently vary according to the character of the disease and its mode of transmission; and the regulations relative to any particular disease may be changed from time to time as the conditions change. For illustration, cattle or sheep that are found upon yard inspection to be affected with scabies, may be slaughtered at the local abattoirs; for these are diseases of the skin due to a small parasite, somewhat like a louse, and the flesh is not affected except in the latter stages of very severe cases. But scabby cattle are prohibited from being shipped to other public yards until after they have been dipped; and where they are to be shipped to country points for feeding, stocker or breeding purposes, they must be dipped twice at about ten days apart. This is done to prevent these diseased animals conveying the disease to those localities that are now free. The regulations relative to hig cholera and its allied diseases, prescribes that no swine can be shipped from public yards to country points for any purpose.

The reasons for this are, that these diseases are contagious and healthy swine may contract them by being yarded in pens that have recently held diseased hogs. Owing to the fact that more or less diseased swine are being continually shipped to market, the public yards are always infected so that all hogs being yarded in them are exposed to the germs of these diseases, and experience has demonstrated that where hogs have been taken from public yards to country feed lots, they usually contract one or more of the diseases and more or less of them die; thus making it not only a poor investment for the owner, but also a center of infection for the spread of the disease; and, therefore, a source of danger to all his neighbors who own swine. Numerous instances are on record where cholera has been carried into non-infected territory and at times several hundred miles from the yards where the disease was contracted.

The general public may think that no one would take the chances of carrying a contagious disease like hog cholera, sheep scab, or cattle mange from the yards to their stock at home, but it should not be forgotten that there are always men who do not know that these diseases and others—a more dangerous class, who think that they are wise enough to do those things that good prudent business men would not consider wise or safe, and the public needs protection from these classes of individuals. This protection is afforded to a greater or less degree by the extension of the meat inspection system to cover this work. So much for the branch covering the control of contagious diseases.

The stock that is sold for slaughter in the city where the inspection is carried on are inspected again—as they go to the scales to be weighed—for such diseases as actinomycosis, tuberculosis, abcesses, injuries, etc., and such animals as present any of these diseases sufficient to make probable that their flesh will be unwholesome for food, are tagged with a metal tag bearing a number so that the animal may be identified when it reaches the slaughter house. Then the inspector doing the post mortem work is notified of the condition of the animal at the time it was weighed and this information is used by him in making his decision as to the wholesomeness or unwholesomeness of the carcass.

When slaughtering is going on at a house where federal inspection is maintained, the inspectors are there to inspect the animals as they are dressed. The inspection of cattle is made by the inspector passing along with the gutter, the man who removes the internal organs, intestines, liver, lungs, heart, etc., and as these viscera drops to the floor, the inspector has an opportunity to examine them. As the inspectors are all educated in this line of work, by practice, they soon become so proficient that they can tell at a glance if the carcass is in a normal condition or not, and usually they can tell as soon as all of the parts can be seen whether the carcass will be wholesome for meat or not. But, in cases where it cannot be determined at once whether the flesh is fit for human food, the carcass is tagged with a numbered paper tag and sent to the detention room where it is held until the exact condition has been determined. All parts of the carcass, as head, tail, fat, etc., must be tanked or held until the animal is finally disposed of and in case the carcass is condemned these parts go with it.

The carcasses of all cattle that are considered unwholesome for food are tagged with condemnation tags and tanked at once or are held in the detaining room, which is under a government lock, the key of which is held by the inspector until such time as it is convenient to the house and inspector to tank them. All condemned carcasses are tanked and rendered with fertilizers, etc. This is done under the supervision of an employe of the bureau, who sees the carcass cut up and put into the tank and then he seals up the tank so that it cannot be opened without breaking the seal. After the carcasses are cooked sufficiently to destroy them for food, the same or another employe of the bureau breaks the seal. All beef quarters that are passed for food, are marked with a label bearing a serial number and the words "U. S. Inspected."

In the larger packing houses, the Logs that are to be slaughtered are driven into a small pen—catch pen—where they are caught by fastening one end of a short chain around one hind leg, and the other end is hooked to a large revolving wheel (hoist) which raises the hog on an inclined rail and as the animal slides down this rail, the sticker, with a long, sharp-ponted knife, severs the large blood vessels just inside the chest. As the carcass passes along the rail, a large part of the blood escapes from the body, then the carcass is dropped from the end of this rail into a long scalding vat, through which it is worked, so that when it reaches the further end, it is sufficiently scalded and is lifted from the vat by machinery to a table where, by means of a special hook inserted between the lower jaws, it is attached to an endless chain which draws it up through a machine known as a scraper, which removes a large portion of the hair.

From the scraper the carcass is dropped to the scraping or heading bench, which has a moving top that carries the carcass along the rail. On this bench more of the hair is removed, the head is nearly severed from the body, and the gambrel is put in place. By this time, the carcass has reached the end of the bench and the gambrel is put upon a roller hook.

and dropped head downward upon the rail. From here, it is carried along by means of an endless chain arrangement. While the carcass is passing along this rail, the remainder of the hair is removed, the carcass is opened, the viscera (internal organs) and leaf lard are removed, and after passing through one or more washers, the head is cut off and the carcass is split in halves. In this condition, it passes to the hanging floor, where it is held a short time to drip and cool off. It is then passed on to the chill (refrigerating) room, where is is thoroughly cooled before being cut up into shoulders, hams, loins, bellies, etc.

By this means it is possible to kill from 200 to 1,000 hogs per hour, according to the room, machinery and number of men employed. To those not familiar with the work, it might appear impossible to properly inspect so many hogs per hour, but, by the method now in vogue, it is possible for two men to do this work very thoroughly and without materially interfering with the workmen of the company.

This is accomplished by having one man examine the glands of the head and neck, either on the header's bench after the head has been cut nearly off, or on the rail before the carcass reaches the gutters; and when a carcass presents lesions of disease either on the external skin surface or in the glands of the neck, he attaches a numbered tag on the carcass, the head and viscera, except the intestine, being left in these carcasses.

The second man, who is stationed at the gutters' bench near the rail, can plainly see all of the carcasses as they pass and also all of the viscera as they are removed; and when he sees a carcass or viscera that is diseased, he tags the carcass. He also makes a close examination of the viscera of all tagged carcasses and notes the lesions found upon a record slip kept for this purpose. When carcass bearing a government tag reaches the hanging floor, it is run aside and held for final inspection.

The final inspection is made by making a close examination of the carcass and the retained viscera—lungs, liver and spleen—and the conditions presented at this examination, together with those noted by the man at the visceral bench, determines what shall be done with the carcass. This final inspection is made necessary because the men do not have time to make a sufficiently close examination while the carcass is passing along the rail. On final inspection, those carcasses that are found diseased to such an extent as to make flesh unwholesome for food, are condemned. But where the disease is not of sufficient extent to render the meat unwholesome, the diseased parts are removed and the carcass passed for food, when it is taken to the chill room with the others of the day's kill.

Of the carcasses condemned when the disease is of such a character or extent as to render it fit for food after proper cooking, it is permissible to render them into lard after all diseased parts have been removed by the inspectors; while such carcasses as are so diseased as to make them wholly unfit for food and all diseased parts are at once placed in tanks and cooked with other refuse material until rendered inedible. Or they may be placed in the retaining room and held under lock until such time as it is convenient for the company and inspector to tank them. The tanking of hog carcesses is done under the supervision of an employe of the government the same as beef carcasses.

The inspection as now carried out is of great importance, not only to the public because of giving them a more wholesome meat supply, but also to the live stock industry in general by materially checking the spread of certain contagious diseases and protecting and keeping open foreign markets for our surplus meat products.

Again, the records of the post mortem inspection furnish valuable knowledge of the prevalence of the more common diseases of meat animals and by comparing the records from year to year, it may be ascertained whether these diseases are on the decrease or increase.

Thus it is demonstrated that tuberculosis of cattle and swine is on the increase, while hog cholera and its allied diseases have been gradually diminishing for several years.

The stock raisers could receive valuable lessons if more of them would call upon the inspectors and go with them and look over the diseased carcasses. By such a method, they would not only learn what diseases are prevalent, but they would become familiar with the appearances—pathology—of the various diseases; and by questioning and discussion of the various questions with the inspectors, they could gain valuable information relative to the freeing and keeping their animals free from disease.

RECOMMENDATION.

The Iowa State Board of Health recommends that all dairy and breeding cattle used in the State of Iowa be tested with tuberculin at intervals of one year, until it is determined that such herds are free from tuberculosis. The board also recommends that every dairyman and breeder when purchasing cattle, be required to see that such animals are free from tuberculosis, as determined by the tuberculin test. It is recommended that the council of every city, town or village in the State of Iowa, adopt a milk and dairy ordinance similar to, or incorporate the provisions embodied in the copy for as ordinance as given below.

SUGGESTED ORDINANCES.

An Ordinance providing for testing dairy herds with tuberculin and regulating the sale of milk in the city of..........................

Be it Ordained by the City Council of..............................

Section 1. No person, firm or corporation shall sell any cream within the city limits of.....................without first having obtatined a license so to do, in the manner provided in section 2 of this ordinance.

Sec. 2. Any person, firm or corporation on desiring a license or renewal of license to sell milk or cream in................shall first make application for such license to the city council by filing an application in writing, which application shall state explicitly the name and address of the applicant, the names and addresses of all persons from whom he purchases milk or cream to be sold, the number of cows owned by him and by each of the persons from which he purchases milk or cream, and that the application be accompanied by a certificate from an inspector whose competency and reliability are certified to by the authority charged with the control of contagious and infectious diseases among domestic animals in the State of Iowa, certifying that said cattle had been examined and subjected to the tuberculin test and found free from disease within one year from the date of filing said application, and that the premises from which the milk is obtained is kept in a sanitary conditon.

SEC. 3. Addtional cattle may be added to the herd or herds, at any time, provided that the holder of the license relative to such, submits to the Mayor, within one week of such addition, a written statement indicating the exact number of cows added to such herd or herds, from whom and where they were obtained, and accompanied by a certificate from an inspector as provided for in section 2.

SEC. 4. The expense of the inspection of the herd or herds as provided in section 2, are to be borne by.............................

SEC. 5. Every license permitting the sale of milk must be renewed at least once every year.

SEC. 6. Any person, firm, or corporation, or employe thereof, violating any provisions of this ordinance, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not exceeding $100, or be imprisoned in the county jail not exceeding thirty days, or both such fine and imprisonment at the discretion of the court.

SEC. 7. The City Council shall have full authority to revoke any license issued under the provisions of this ordinance.

SEC. 8. This ordinance shall take effect and be in full force from and after its passage and publication, as provided by law.

Attest:

....

Mayor.

....

Recorder.

PART X.

COMMON DISEASES AMONG DOMESTIC ANIMALS.

SYMPTOMS AND TREATMENT.

From Special Report of U. S. Department of Agriculture.
Department of Animal Industry.

DISEASES OF THE DIGESTIVE ORGANS.

BY CH. B. MICHENER, V. S

(Revised in 1903 by Leonard Pearson, B. S., V. M. D.)

It will not prove an easy task to write "a plain account of the common diseases, with directions for preventive measures, hygienic care, and the simpler forms of medical treatment," of the digestive organs of the horse. This study includes a careful consideration of the food and drink of our animals, their quality, quantity, analyses, etc. This, of itself, is material for a book. Being limited as to space, the endeavor must be made to give simply an outline—to state the most important facts—leaving many gaps, and continually checking the disposition to write anything like a full description as to cause, prevention, and modes of treatment of disease.

These articles are addressed entirely to farmers and stock owners, and I must ask my professional brethren to bear this in mind when they are disposed to complain of a want of scientific treatment of the subjects.

WATER.

It is generally held, at least in practice, that any water that stock can be induced to drink is sufficiently pure for their use. This practice occasions losses that would startle us if statistics were at hand. Water that is impure from the presence of decomposing organic matter, such as is found in wells and ponds in close proximity to manure heaps and cesspools, is frequently the cause of diarrhoea, dysentery, and many other diseases of stock, while water that is impregnated with different poisons and contaminated with specific media of contagion produces death in very many instances.

Considering first the quantity of water required by the horse, it may be stated that when our animals have access to water continually they never drink to excess. Where the horse subjected to ship voyages or any other circumstances where he must depend upon his attendant for the supply of water, it may be roughly stated that each horse requires a daily average of about 8 gallons of water. This will vary somewhat upon the character of his food; if upon green food, less water will be needed than when fed upon dry hay and grain.

The time of giving water should be carefully studied. At rest, the horse should receive water at least three times a day; when at work, more frequently. The rule should be to give in small quantites and often. There is a popular fallacy that if a horse is warm he should not be allowed to drink, many claiming that the first swallow of water "founders" the animal or produces colic. This is erroneous. No matter how warm a horse may be, it is always entirely safe to allow him from six to ten swallows of water. If this is given on going into the stable, he should be given at once a pound or two of hay and allowed to rest about an hour before feeding. If water be now offered him it will in many cases be refused, or at least he will drink but sparingly. The danger, then, is not in the "first swallow" of water, but is due to the excessive quantity that the animal will take when warm if he is not restrained.

Water should never be given to horses when it is ice cold. It may not be necessary to add hot water, but we should be careful in placing water troughs about our barns to have them in such position that the sun may shine upon the water during the winter mornings. Water, even though it be thus cold, seldom produces serious trouble if the horse has not been deprived for a too great length of time.

In reference to the purity of water, Smith, in his "Veterinary Hygiene," classes spring water, deep-well water, and upland surface water as wholesome; stored rain water and surface water from cultivated land, as suspicious; river water to which sewage gains access and shallow-well water, as dangerous. The water that is used for drinking purposes for stock so largely throughout some states can not but be impure. I refer to those sections where there is an impervious clay subsoil. It is the custom to scoop, or hollow out, a large basin in the pastures. During rains these basins become filled with water. The clay subsoil, being almost impervious, acts as a jug, and there is no escape for the water except by evaporation. Such water is stagnant, but would be kept comparatively fresh by subsequent rains were it not for the fact that much organic matter is carried into it by surface drainage during each succeeding storm. This organic matter soon undergoes decomposition, and, as the result, we find diseases of different kinds much more prevalent where this water is drunk than where the water supply is wholesome. Again, it must not be lost sight of that stagnant surface water is much more certainly contaminated than is running water by one diseased animal of the herd, thus endangering the remainder.

The chief impurities of water may be classified as organic and inorganic. The organic impurities are either animal or vegetable substances. The salts of the metals are the inorganic impurities. Lime causes hardness of water, and occasion will be taken to speak of this when describing intestinal concretions. Salts of lead, iron, and copper are also frequently found in water, and will be referred to hereafter.

About the only examination of water that can be made by the average stock raiser is to observe its taste, color, smell, and clearness. Pure water is clear and is without taste or smell.

Chemical and microscopic examination will frequently be necessary in order to detect the presence of certain poisons, bacteria, etc., and can, of course, be conducted by experts only.

FOODS AND FEEDING.

In this place one can not attempt anything like a comprehensive discussion of the subject of foods and feeding, and I must content myself with merely giving a few facts as to the different kinds of food, preparation, digestibility, proper time of feeding, quality, and quantty. Improper feeding and watering will doubtless account for over one-half of the digestive disorders met wth in the horse, and hence the reader can not fail to see how very important it is to have some proper ideas concerning these subjects.

KINDS OF FOOD.

In this country horses are fed chiefly upon hay, grass, corn, fodder, roots, oats, corn, wheat, and rye. Many think that they could be fed on nothing else. Stewart, in "The Stable Book," gives the following extract from Loudon's Encyclopedia of Agriculture, which is of interest on this point:

'In some sterile countries they (horses) are forced to subsist on dried fish, and even on vegetable mold; in Arabia, on milk, flesh balls, eggs, broth. In India horses are variously fed. The native grasses are judged very nutritious. Few, perhaps no, oats are grown; barley is rare, and not commonly given to horses. In Bengal a vetch, something like the tare, is used. On the western side of India a sort of pigeon pea, called gram (*cicer arietinum*), forms the ordinary food, with grass while in season, and hay all the year round. Indian corn or rice is seldom given. In the West Indies maize, guinea corn, sugar-corn tops, and sometimes molasses are given. In the Mahratta country salt, pepper, and other spices are made into balls, with flour and butter, and these are supposed to produce animation and to fine the coat. Broth made from sheep's head is sometimes given. In France, Spain, and Italy, besides the grasses, the leaves of limes, vines, the tops of acacia, and the seeds of the carob tree are given to horses.

"For information as to the nutritive value, chemistry, and classification of the different kinds of food, I will refer the reader to Jordan's or Armsby's book on feeding animals, or to 'Smith's Veterinary Hygiene.'"

We cannot, however, leave aside entirely here a consideration of the digestibility of foods; and by this we mean the readiness with which foods undergo those changes in the digestive canal that fit them for absorption and deposition as integral parts of the animal economy.

The age and health of the animal will, of course, modify the digestibility of foods, as will also the manner and time of harvesting, preserving, and preparing the foods.

In the horse digestion takes place principally in the intestines, and here, as in all other animals and with all foods, it is found that a certain part only of the provender is digested; another portion is undigested. This proportion of digested and undigested food must claim passing notice at least, for if the horse receives too much food, or bulky food containing much indigestible waste, a large portion of food must pass unused, entailing not only the loss of the unused food, but also calling for an unnecessary expenditure of vital force on the part of the digestive organs of the horse. It is thus that, in fact, too much food may make an animal poor.

In selecting food for the horse we should remember the anatomical arrangement of the digestive organs, as well as the physiological functions performed by each one of them. Foods must be wholesome, clean, and sweet, the hours of feeding regular, the mode of preparation found by practical experience to be the best must be adhered to, and cleanliness in preparation and administration must be observed.

The length of time occupied by stomach digestion in the horse varies with the different foods. Hay and straw pass out of the stomach more rapidly than oats. It would seem to follow, then, that oats should be given after hay, for if reversed the hay would cause the oats to be sent onward into the intestines before being fully acted upon by the stomach, and as a result produce indigestion. Experience confirms this. There is another good reason why hay should be given first, particularly if the horse is very hungry or if exhausted from overwork, namely, it requires more time in mastication (insuring proper admixture of saliva) and can not be bolted, as are the grains. In either instance water must not be given soon after feeding, as it washes or sluices the food from the stomach before it is fitted for intestinal digestion.

The stomach begins to empty itself very soon after the commencement of feeding, and continues rapidly while eating. Afterwards the passage is slower, and several hours are required before the stomach is entirely empty. The nature of the work required of the horse must guide us in the selection of his food. Rapid or severe labor can not be performed on a full stomach. For such labor food must be given in small quantity and about two hours before they go to work. Even horses intended for slow work must never be engorged with bulky, innutritious food immediately before going to labor. The small stomach of the horse would seem to lead us to the conclusion that this animal should be fed in small quantities and often, which, in reality, should be done. The disproportion between the size of the stomach and the amount of water drank tells us plainly that the horse should always be watered before feeding. One of the common errors of feeding, and the one that produces more digestive disorders than any other, is to feed too soon after a hard day's work. This must never be done. If a horse is completely jaded, it will be found beneficial to give him an alcoholic stimulant on going into the stable. A small quantity of hay may then be given, but his grain should be withheld for one or two hours. These same remarks will apply with equal force to the horse that for any reason has been fasting for a long time. After a fast, feed less than the horse would eat; for if allowed too much the stomach becomes engorged, its walls paralyzed and "colic" is almost sure to follow. The horse should be fed three or four times a day. It will not answer to feed him entirely upon concentrated food. Bulky food must be given to dettain the grains in their passage through the intestinal tract; bulk also favors distention, and thus mechanically aid absorption. For horses that do slow work for the greater part of the time, chopped or cut hay fed with crushed oats, ground corn, etc., is the best manner of feeding, as it gives the required bulk, saves time, and half the labor of feeding.

Sudden changes of diet are always dangerous. When desirous of changing the food, do so very gradually. If a horse is accustomed to oats, a sudden change to a full meal of corn will almost always sicken him. If we merely intend to increase the quantity of the usual feed, this also must be done gradually. The quantity of food given must always be in proportion to the amount of labor to be performed. If a horse is to do a small amount of work, or rest, entirely from work for a few days, see that he receives a proportionate amount of feed. If this should be observed even on Saturday sight and Sunday, there would be fewer cases of "Monday morning sickness," such as colics and lymphangitis.

Foods should also be of a more laxative nature when the horse is to stand for some days.

Musty or Moldy Foods.—Above all things, avoid feeding musty or moldy foods. These are very frequent causes of disease of different kinds. Lung trouble, such as bronchitis and "heaves," often follows the use of such food. The digestive organs always suffer from moldy or musty foods. Musty hay is generally considered to produce disorder of the kidneys; and all know of the danger to pregnant animals from feeding upon ergotized grasses or grains. It has often been said to produce that peculiar disease known variously as cerebro-spinal meningitis, putrid sore throat, or choking distemper.

Leaving these somewhat general considerations, I will refer briefly to the different kinds of foods:

Hay.—The best hay for horses is timothy. It should be about one year old, of a greenish color, crisp, clean, fresh, and possessing a sweet, pleasant aroma. Even this hay, if kept for too great a length of time, loses part of its nourishment, and, while it may not be positively injurious, it is hard, dry, and indigestible. New hay is difficult to digest, produces much salivation (slobbering) and occasional purging and irritation of the skin. If fed at all, it should be mixed with old hay.

Second Crop, or Aftermath.—This is not considered good hay for horses, but it is prized by some farmers as a good food for milch cows, the claim being made that it increases the flow of milk. The value of hay depends upon the time of cutting, as well as care in curing. Hay should be cut when in full flower, but before the seeds fall; if left longer, it becomes dry and woody and lacks in nutrition. An essential point in making hay is that when the crop is cut it should remain as short a time as possible in the field. If left too long in the sun it loses color, flavor, and dries or wastes. Smith asserts that one hour more than is necessary in the sun causes a loss of 15 to 20 per cent in the feeding value of hay. It is impossible to state any fixed time that hay must have to cure, this depending, of course, upon the weather, thickness of the crop, and many other circumstances; but it is well known that, in order to preserve the color and aroma of hay, it should be turned or tedded frequently and cured as quickly as possible. On the other hand, hay spoils in the mow if harvested too green, or when not sufficiently dried. Mowburn hay produces disorder of the kidneys and bowels and causes the horse to fall off in condition.

The average horse on grain should be allowed from 10 to 12 pounds of good hay a day. It is a mistake of many to think that horses at light work can be kept entirely on hay. Such horses soon become pot-bellied, fall off in flesh, and do not thrive. The same is true of colts; unless the latter are fed with some grain they grow up to be long, lean, gawky creatures, and never make as good horses as those accustomed to grain with, or in addition to, their hay.

Straw.—The straws are not extensively fed in this country, and when used at all they should be cut and mixed with hay and ground or crushed grain. Wheat, rye, and oat straw are the ones most used, and of these oat straw is most easily digested and contains the most nourishment. Pea and bean straw are occasionally fed to horses, the pea being preferable, according to most writers.

Chaff.—Wheat and rye chaff should never be used as a food for horses. The beards frequently become lodged in the mouth or throat and are productive of more or less serious trouble. In the stomach and intestines they often serve as the nucleus of the "soft concretions," which are to be described when treating of obstructions of the digestive tract.

Oat chaff, if fed in small quantities and mixed with cut hay or corn fodder, is very much relished by horses. It is not to be given in large quantities, as I have repeatedly witnessed a troublesome and sometimes fatal diarrhoea following the practice of allowing horses or cattle free access to a pile of oat chaff.

Grains.—Oats take precedence of all gains as a food for horses, as the ingredients necessary for the complete nutrition of the body exist in them in the best proportions. Oats are, besides, more easily digested and a larger proportion absorbed and converted into the various tissues of the body. Care must be taken in selecting oats. According to Stewart, the best oats are one year old, plump, short, hard, clean, bright, and sweet. New oats are indigestible. Kiln-dried oats are to be refused, as a rule, for even though originally good this drying process injures them. Oats that have sprouted or fermented are injurious and should never be fed. Oats are to be given either whole or crushed—whole in the majority of instances; crushed to old horses and those having defective teeth.

Horses that bolt their feed are also best fed upon crushed oats and out of a manger large enough to permit of spreading the grain in a thin layer.

The average horse requires, in addition to the allowance of hay above mentioned, about 12 quarts of good oats daily. The best oats are those cut about one week before being fully ripe. Not only is the grain richer in nutritive materials at this time, but there is also less waste from "scattering" than if left to become dead ripe. Moldy oats, like hay and straw, not only produce serious digestive disorders, but have been the undoubted cause of outbreaks of that dread disease in horses, already referred to, characterized by inability to eat or drink, sudden paralysis and death.

Wheat and Rye.—These grains are not to be used as food for horses except in small quantities, bruised or crushed, and fed mixed with other grains or hay. If fed long, in any considerable quantities, they are almost certain to produce digestive disorders, laminitis (founder), and similar troubles. They should never constitute more than one-fourth of the grain allowance, and should always be ground or crushed.

Bran.—The bran of wheat is the one most used, and its value as a feeding stuff is variously estimated. It is not to be depended upon if given alone, but may be fed with other grains. It serves to keep the bowels open. Sour bran is not to be given. It disorders the stomach and intestines and may even produce serious results.

Maize (Corn).—This grain is not suitable as an exclusive food for young horses, as it is deficient in salts. It is fed whole or ground. Corn on the cob is commonly used as the food for horses affected with "lampas." If the corn is old and is to be fed in this manner it should be soaked in pure, clean water for ten or twelve hours. Corn is better given ground, and fed in quantities of from 1 to 2 quarts at a meal mixed with crushed oats or wheat bran. Be very particular in giving corn to a horse that is not accustomed to its use. It must be commenced in small quantities and very gradually increased. I know of no grain more likely to produce what is called acute indigestion than corn if these directions are not observed.

Linseed.—Ground linseed is occasionally fed with other foods to keep the bowels open and to improve the condition of the skin. It is of particular service during convalescence, when the bowels are sluggish in their action. Linseed tea is very often given in irritable or inflamed conditions of the digestive organs.

Potatoes.—These are used as an article of food for the horse in many sections. If fed raw and in large quantities they often produce indigestion. Their digestibility is favored by steaming or boiling. They possess, in common with outher roots, slight laxative properties.

Beets.—These are not much used as food for horses.

Carrots.—These make a most excellent food, particularly during sickness. They improve the appetite and slightly increase the action of the bowels and kidneys. They possess also certain alterative properties. The coat becomes smooth and glossy when carrots are fed. Some veterinary writers claim that chronic cough is cured by giving carrots for some time. The roots may be considered, then, as an adjunct to the regular regimen, and if fed in small quantities are highly beneficial.

Grasses.—Grass is the natural food of horses. It is composed of a great variety of plants, differing widely as to the amount of nourishment contained, some being almost entirely without value as foods and only eaten when there is nothing else obtainable, while others are positively injurious, or even poisonous. None of the grasses are sufficient to keep the horse in condition for work. Horses thus fed are "soft," sweat easily, purge, and soon tire on the road or when at hard work. To growing stock grass is indispensable, and there is little or no doubt but that it acts as an alterative when given to horses accustomed to grain and hay. It must be given to such horses in small quantities at first. The stomach and intestines undergo rest, and recuperate if the horse is turned to grass for a time each year. It is also certain that during febrile diseases grass acts almost as a medicine, lessening the fever and favoring recovery. Wounds heal more rapidly than when the horse is on grain, and some chronic disorders (chronic cough, for instance) disappear entirely when at grass. In my experience, grass does more good when the horse crops it himself. This may be due to the sense of freedom he enjoys at pasture, to the rest to his feet and limbs, and for many other similar reasons. When cut for him it should be fed fresh or when but slightly wilted.

PREPARATION OF FOODS.

Foods are prepared for feeding for any of the following reasons: To render the food more easily eaten; to make it more digestible; to economize in amount; to give it some new property; and to serve it. We have already spoken of the preparation of drying and need not revert to this again, as it only serves to preserve the different foods. Drying does, however, change some of the properties of food, i. e., removes the laxative tendency of most of them.

The different grains are more easily eaten when ground, crushed, or even boiled. Rye or wheat should never be given whole, and even of corn it is found that there is less waste when ground, and, in common with all grains, it is more easily digested than when fed whole.

Hay and fodder are economized when cut in short pieces. Not only will the horse eat the necessary amount in a shorter time, but it will be found that there is less waste, and the mastication of the grains (whole or crushed) fed with them is insured.

Reference has already been made to these horses that bolt their food, and we need only remark here that the consequences of such ravenous eating may be prevented if the grains are fed with cut hay, straw or fodder. Long or uncut hay should also be fed, even though a certain amount of hay or straw is cut and fed mixed with grain.

One objection to feeding cut hay mixed with ground or crushed grains, and wetted, must not be overlooked during the hot months. Such food is apt to undergo fermentation if not fed directly after it is mixed; and the mixing trough even, unless frequently scaled and cleaned, becomes sour and enough of its scrapings are given with the food to produce flatulent (wind) colic. A small amount of salt should always be mixed with food. Bad hay should never be cut simply because it insures a greater consumption of it; bad foods are dear at any price and should never be fed.

I have before spoken of the advantage of boiling roots. Not only does this render them less liable to produce digestive disorders, but it also makes them clean. Boiling or steaming grains is to be recommended when the teeth are poor, or when the digestive organs are weak. Of ensilage as a food for horses I have no experience, but am inclined to think that (and this opinion is based upon the imperfect manner in which the crop is often stored) disordered digestion would be more frequent were it extensively fed.

COLIC.

Colic.—The disease of the horse that is most frequently met with is what it termed "colic," and many are the remedies that are reputed to be "sure cures" for this disease. Let us discover, then, what the word "colic" means. This term is applied loosely to almost all diseases of the organs of the abdomen that are accompanied by pain. If the horse evinces abdominal pain, he is likely to be put down as suffering with colic, no matter whether the difficulty be a cramp of the bowel, an internal hernia, overloading of the stomach, or a painful disease of the bladder or the liver. Since these conditions differ so much in their causation and their nature, it is manifestly absurd to treat them alike and to expect the same drugs or procedures to relieve them all. Therefore it is important that the various diseased states that are so roughly classed together as colic shall so far as possible, be separated and individualized in order that appropriate treatments may be prescribed. With this object in view, colics will be considered under the following headings: (1) engorgement colic; (2) obstruction colic; (3) tympanitic colic; (4) spasmodic colic; (5) worm colic.

The general symptoms of abdominal pain, and therefore of colic are restlessness, cessation of whatever the horse is about, lying down, looking around toward the flank, kicking with the hind feet upward and forward toward the belly, jerky switching of the tail, stretching as though to urinate, frequent change of position, and groaning. In the more intense forms the horse plunges about, throws himself down, rolls, assumes unnatural positions, as sitting on the haunches, and grunts loudly. Usually the pain is not constant, and during the period of pain sweat is poured out freely. Sometimes the horse moves constantly in a circle. The respirations are accelerated, and usually there is no fever.

(1) *Engorgement Colic.*—This form of colic consists in an overloading of the stomach with food. The horse may have overfed or the food may have collected in the stomach through failure of this organ to digest it and pass it backward into the intestines. Even a normal amount of food that the horse is unaccustomed to may cause disease. Hence a sudden change of food may produce engorgement colic. Continued full

rations while the horse is resting for a day or two or working too soon after feeding may serve as a cause. New oats, corn, or hay, damaged food, or food difficult of digestion, such as barley or beans, may incite engorgement colic. This disease may result from having fed the horse twice by error or from its having escaped and taken an unrestricted meal from the grain bin. Ground feeds that pack together making a sort of dough may cause engorgement colic if they are not mixed with cut hay. Greedy eaters are predisposed to this disease.

Symptoms.—The horse shows the general signs of abdominal pain, which may be long continued or of short duration. Retching or vomiting movements are made; these are shown by labored breathing, upturned upper lip, contraction of the flank, active motion at the throat, and drawing in of the nose toward the breast, causing high arching of the neck. The horse may assume a sitting position on his haunches, like a dog. At times the pain is very great and the horse makes the most violent movements, as though mad. At other times there is profound mental depression, the horse standing in a sleepy, dazed way, with the head down, the eyes closed, and leaning his head against the manger or wall. There is, during the struggles, profuse perspiration. Following retching, gas may escape from the mouth, and this may be followed by a sour froth and some stomach contents. The horse can not vomit except when the stomach is violently stretched, and, if the accumulation of food or gas is great enough to stretch the stomach so that vomiting is possible, it may be great enough to rupture this organ. So it happens not infrequently that a horse will die from ruptured stomach after vomiting. But after the stomach ruptures vomiting is impossible. The death rate in this form of colic is high.

Treatment.—The bowels should be stimulated to contraction by the use of clysters of large quantities of water and of glycerin. Veterinarians use hypodermic injections of eserin or arecolin or intravenous injections of barium chloride, but these have to be employed with great caution. It is not profitable to give remedies by the stomach, for they can not be absorbed. But small dose of morphine (5 grains) or of the fluid extract of Indian hemp (2 drams) may be placed in the mouth and are absorbed in part, at least, without passing to the stomach. These drugs lessen pain and thus help to overcome the violent movements that are dangerous, because they may be the means of causing rupture of the diaphragm or stomach. If facilities are available, relief may be afforded by passing an esophageal tube through which some of the gaseous and liquid contents of the stomach may escape.

Rupture of the Stomach.—This mostly occurs as a result of engorged or tympanitic stomach (engorgement colic) and from the horse violently throwing himself when so affected. It may result from disease of the coats of the stomach, gastritis, stones, or calculi, tumors, or anything that closes the opening of the stomach into the intestines, and very violent pulling or jumping immediately after the animal has eaten heartily of bulky food. These or similar causes may lead to this accident. The symptoms of rupture of the stomach are not constant or always reliable. Always make inquiry as to what and how much the horse has been fed at the last meal. Vomiting may precede rupture of this organ, as stated above. This accident appears to be most likely to occur in heavy draft horses. A prominent symptom observed (though it may also occur in diaphragmatic hernia) is where the horse, if possible, gets the front feet on higher ground than the hind ones or sits on his haunches, like a dog. This position affords relief to some extent, and it will be maintained for some minutes; it is also quickly regained when the horse has changed it for some other. Colicky symptoms, of course, are present, and these will vary much and present no diagnostic value. As the case progresses "the horse will often stretch forward the forelegs, lean backward and downward until the belly nearly touches the ground, and then rise up again with a groan, after which the fluid from his nostrils is issued in increased quantity." The pulse is fast and weak, breathing hurried, body bathed in a clammy sweat, limbs tremble violently, the horse reels or staggers from side to side, and death quickly ends the scene.

In the absence of any pathognomonic symptoms of colic that cease suddenly and are succeeded by cold sweats and tremors; the pulse quick and small and thready, growing weak and more frequent, and at length running down and becoming altogether imperceptible; looking back at the flank and groaning; sometimes crouching with hind quarters; with or without eructation and vomiting.

There is no treatment that can be of any use whatever. Could we be sure of our diagnosis it would be better to destroy the animal at once. Since, however, there is always the possibility of a mistake in diagnosis, we may give powdered opium in 1-dram doses every two or three hours, with the object of keeping the stomach as quiet as possible.

(2) *Obstruction Colic.*—The stomach or bowels may be obstructed by accumulations of partly digested food fecal matter, by foreign bodies, by displacements, by paralysis, or by abnormal growths.

Impaction of the Large Intestines. This is a very common bowel trouble and one which, if not promptly recognized and properly treated, results in death. It is caused by overfeeding, especially of bulky food containing an excess of indigestible residue; old, dry, hard hay, or stalks when largely fed; deficiency of secretions of the intestinal tracts; lack of water; want of exercise, medicines, etc.

Symptoms.—Impaction of the large bowels is to be diagnosed by a slight abdominal pain, which may disappear for a day or two to reappear with more violence. The feces are passed somewhat more frequently, but in smaller quantities and more dry; the abdomen is full, but not distended with gas; the horse at first is noticed to pay and soon begins to look back at his sides. Probably one of the most characteristic symptoms is the position assumed when down. He lies flat on his side, head and legs extended, occasionally raising his head to look toward his flank; he remains on his side for from five to fifteen minutes at a time. Evidently this position is the one giving the most freedom from pain. He rises at times, walks about the stall, paws, looks at his sides, backs up against the stall, which he presses with his tail, and soon lies down again, assuming his favorite position. The intestinal sounds, as heard by applying the ear to the flank, are diminished, or there is no sound, indicating absence of motion of the bowels. The bowels may cease entirely to move. The pressure of the distended intestine upon the bladder may cause the horse to make frequent attempts to urinate. The pulse is but little changed at first, being full and sluggish; later, if this condition is not overcome, it becomes rapid and feeble. Horses may suffer from impaction of the bowels for a week, yet eventually recover, and cases extending two or even three weeks have ended favorably. As a rule, however, they seldom last four or five days, many, in fact, dying sooner than this.

The treatment consists of efforts to produce movement of the bowels and to prevent inflammation of the same from arising. A large cathartic is to be given as early as possible. Either of the following are recommended: Powdered Barbados aloes 1 ounce, calomel 2 drams, and powdered nux vomica 1 dram; or linseed oil 1 pint and croton oil 15 drops; or from 1 pint to 1 quart of castor oil may be given. Some favor the administration of Epsom or Glauber s salts, 1 pound, with ¼ pound of common salt, claiming that this causes the horse to drink largely of water, and thus mechanically softening the impacted mass and favoring its expulsion. Whichever physic is selected, it is essential that a full dose be given. This is much better than small and repeated doses. It must be borne in mind that horses require about twenty-four hours in which to respond to a physic, and under no circumstances are physics to be repeated sooner than this. If aloes has been given and has failed to operate at the proper time, oil or some different cathartic should then be administered. Allow the horse all the water he will drink. Calomel may be administered in half-dram doses, the powder being placed on the tongue, one dose every two hours until four doses are given.

Enemas of glycerin, 2 to 4 ounces, are often beneficial. Rubbing or kneading of the abdominal walls and the application of stimulating liniments or strong mustard water will also, at times, favor the expulsion of this mass. Walking exercise must occasionally be given. If this treatment is faithfully carried out from the start the majority of cases will terminate favorably. Where relief is not obtained inflammation of the bowels may ensue and death follow from this cause.

Constipation, or Costiveness.—This is often witnessed in the horse, and particularly in the foal. Many colts die every year from failure on the part of the attendant to note the condition of the bowels soon after birth. Whenever the foal fails to pass any feces, and in particular if it presents any signs of colicky pains—straining, etc.—immediate attention must be given it. As a rule, it will only be necessary to give a few injections of soapy water in the rectum and to introduce the finger through to anus to break down any hardened mass of dung found there. If this is not effective, a purgative must be given. Oils are the best for these young animals, and preferably castor oil, giving from 2 to 4 ounces. The foal should always get the first of the mother's milk, as this milk, for a few days, possesses decided laxative properties. If a mare, while suckling, is taking laudanum, morphine, atropia, or similar medicines, the foal should be fed during this time by hand and the mare milked upon the ground. Constipation in adult horses is often the result of long feeding on dry, innutritious food, defiiciency of intestinal secretions, scanty water supply, or lack of exercise. If the case is not complicated with colicky symptoms, a change to light, sloppy diet, linseed gruel or tea, with plenty of exercise, is all that is required. If colic exists, a cathartic is needed. In very many instances the constipated condition of the bowels is due to lack of intestinal secretions, and when so due, may be treated by giving fluid extract of belladonna three times a day in 2 dram doses, and handful doses daily of Epsom salts in the feed. It is always best, when possible, to overcome this trouble by a change of diet rather than by the use of medicines. For the relief of constipation such succulent foods as roots, grass, or green forage are recommended. Silage, however, should be fed sparingly, and not at all unless it is in the very best condition. Moldy silage may cause fatal disease.

Foreign Bodies (Calculi [stones] in the stomach.—There are probably but few symptoms exhibited by the horse that will lead one to suspect the presence of gastric calculi, and possibly none by which we can unmistakably assert their presence. Stones in the stomach have been most frequently found in millers' horses fed sweepings from the mill. A depraved and capricious appetite is common in horses that have a stone forming in their stomach. There is a disposition to eat the woodwork of the stable, earth, and, in fact, almost any substance within their reach. This symptom must not, however, be considered as pathognomonic, since it is observed when calculi are not present. Occasional colics may result from these "stomach stones," and when these lodge at the outlet of the stomach they may give rise to symptoms of engorged stomach, already described. There is, of course, no treatment that will prove effective. Give remedies to move the bowels, to relieve pain, and to combat inflammation.

Intestinal Conerctions (calculi [stones] in the intestines).—These concretions are usually found in the large bowels, though they are occasionally met with in the small intestines. They are of various sizes, weighing from 1 ounce to 25 pounds; they may be single or multiple, and differ in composition and appearance, some being soft (composed mostly of animal or vegetable matter), while others are porous, or honeycombed (consisting of animal and mineral matter), and others are entirely hard and stonelike. The hair balls, so common to the stomach and intestines of cattle, are very rare in the horse. Intestinal calculi form around some foreign body, as a rule—a nail or piece of wood—whose shape they may assume to a certain extent. Layers are arranged concentrically around such nucleus until the sizes above spoken of are attained. These stones are also often found in millers' horses, as well as in horses in limestone districts, where the water is hard. When the calculi attain a sufficient size and become lodged or blocked in some part of the intestines, they cause obstruction, inflammation of the bowels, colicky symptoms, and death. There are no certain signs or symptoms that reveal them. Recurring colics of the type of impaction colic, but more severe, may lead one to suspect the existence of this condition. Examination through the rectum may reveal the calculus.

The symptoms will be those of obstruction of the bowels. Upon post mortem examinations these stones will be discovered mostly in the large bowels; the intestines will be inflamed or gangrenous about the point of obstruction. Sometimes calculi have been expelled by the action of a physic, or they may be removed by the hand when found to occupy the rectum.

As in concretions of the stomach, there can be but little done in the way of treatment more than to overcome spasm (if any exists), and to give physics with the hope of dislodging the stone or stones and carrying them on and outward.

Intussusception, or Invagination.—This is the slipping of a portion of the intestine into another portion immediately adjoining, like a partially turned glove finger. This may occur at any part of the bowels, but is most frequent in the small guts. The invaginated portion may be slight —2 or 3 inches only—or extensive, measuring as many feet. In intussusception, the inturned bowel is in the direction of the anus. There are adhesions of the intestines at this point, congestion, inflammation, or even gangrene. This accident is most likely to occur in horses that are suffering from spasm of the bowel, or in those where a small portion of the gut is paralyzed. The natural wormlike or ringlike contraction of the gut favors the passage of the contracted or paralyzed portion into that immediately behind it. It may occur during the existence of almost any abdominal trouble, as diarrhea, inflammation of the bowels, or from injuries, exposure to cold, etc. A fall or leaping may give the initial maldirection. Foals are most likely to be thus afflicted.

Symptoms.—Unless the invaginated portion of the gut becomes strangulated, probably no symptoms will be appreciable, except constipation. Strangulation of the bowel may take place suddenly, and the horse die within twenty-four hours, or it may occur after several days—a week even—and death follow at this time. There are no symptoms positively diagnostic. Colicky pains, more or less severe and continuous, are observed, and there may be at first diarrhea followed by constipation. Severe straining occurs in some instances of intussusception, and this should be given due credit when it occurs. As death approaches the horse sweats profusely, sighs, presents an anxious countenance, the legs and ears become cold, and there is often freedom from pain immediately before death. In some rare instances the horse recovered, even though the invaginated portion of the gut has become strangulated. In this case the imprisoned portion sloughs away so gradually that a union has taken place between the intestines at the point where one portion has slipped into that behind it. The piece sloughing off is found passed with the manure. Such cases are exceedingly rare. Non-irritating laxatives, such as castor oil, sweet oil, or calomel in small doses should be given, and creolin in 2-dram doses in a pint of warm water. Soft feed and mucilaginous and nourishing drinks should be given during these attacks. E. Mayhew Michener has operated successfully on a foal with intussusception by opening the abdomen and releasing the imprisoned gut.

Volvulus, gut tie, or twisting of the bowels.—These are the terms applied to the bowels when twisted or knotted. This accident is rather a common one, and frequently results from the violent manner in which a horse throws himself about when attacked by spasmodic colic. The symptoms are the same as these of intussusception and obstructions of the bowels; the same directions as to treatment are therefore to be observed.

Paralysis of the Intestine.—This occurs in old, debilitated animals that have been fed on coarse innutritious fodder. This produces a condition of dilatation so pronounced as to make it impossible for the intestine to advance its contents, and so obstruction results. The symptoms are as in other forms of obstruction colic. The history of the case is of much service in diagnosing the trouble. The treatment consists in the administration of laxatives. One may give 1 quart of raw linseed oil and follow it the next day with 1 pound of Glauber's salts dissolved in a quart of warm water. Strychnia may be given in doses of 1 grain two or three times daily. If the stagnant mass of feces is in the rectum, it must be removed with the hand.

Abnormal Growths, such as tumors or fibrous tissue, producing contraction or stricture may be causes of obstruction. The colic caused by these conditions is chronic. The attacks occur at gradually shortening intervals and become progressively more severe. Relief is afforded by the use of purgatives that render the feces soft and thin and thus enable them to pass the obstruction. But in time the contracted place is likely to close so far that passage is impossible and the horse will die.

(3) *Flatulent Colic* (Tympanitic colic, wind colic, or bloat).—Among the most frequent causes of this form of colic are to be mentioned sudden changes of food, too long fasting, food then given while the animal is exhausted, new hay or grain, large quantities of green food, food that has lain in the manger for some time and become sour, indigestible food, irregular teeth, crib-biting, and, in fact, anything that produces indigestion may produce flatulent colic.

The symptoms of wind colic are not so suddenly developed nor so severe as those of cramp colic. At first the horse is noticed to be dull, paws slightly, and may or may not lie down. The pains from the start are continuous. The belly enlarges, and by striking it in front of the haunches a drumlike sound results. If not soon relieved the above symptoms are aggravated, and in addition there are noticed different breathing, bloodshot eyes, and red mucous membranes, loud tumultuous heart beat, profuse perspiration, trembling of front legs, sighing respiration, staggering from side to side, and finally, plunging forward dead. The diagnostic symptom of flatulent colic is the distention of the bowels with gas, detected by the bloated appearance and resonance on percussion.

The treatment for wind colic differs very materially from that of cramp colic. Absorbents are of some service, and charcoal may be given in any quantity. Relaxants and antispasmodics are also beneficial in this form of colic. Chloral hydrate not only possesses these qualities but it also is an antiferment and a pain reliever. It is then particularly well adapted to the treatment of wind colic, and should be given in the same-sized doses and in the manner directed for spasmodic colic. Diluted alcohol or whisky may be given, or aromatic spirits of ammonia in 1 ounce doses at short intervals.

A physic should always be given in flatulent colic as early as possible, the best being Barbados aloes in the dose already mentioned. Injections, per rectum, of turpentine, 1 to 2 ounces, linseed oil, 8 ounces., may be given frequently to stimulate the peristaltic motion of the bowels and favor the escape of wind. Blankets wrung o t of hot water do much to afford relief; they should be renewed every five or ten minutes and covered with a dry wollen blanket. This form of colic is much more fatal than cramp colic, and requires prompt and persistent treatment. It is entirely unsafe to predict the result, some apparently mild attacks going on to speedy death, while others that appear at the onset to be very severe yielding rapidly to treatment. Do not cease your efforts until you are sure the animal is dead. In these severe cases puncturing of the bowels in the most prominent (distended) part by means of a small trocar and cannula or with a needle of a hypodermic syringe, thus allowing the escape of gas, has often saved life, and such punctures, if made with a clean, sharp instrument that is not allowed to remain in the horse too long are accompanied by little danger and do more to quickly relieve the patient than any other treatment.

(4) *Spasmodic, or Cramp, Colic.*—This is the name given to that form of colic produced by contraction, or spasm, of a portion of the small intestines. It is produced by indigestible food; large drinks of cold water when the animal is warm; driving a heated horse through deep streams; cold rains; drafts of cold air, etc. Unequal distribution of or interference with the nervous supply here produces cramp of the bowels, the same as external cramps are produced. Spasmodic colic is much more frequently met with in high-bred, nervous horses than in coarse, lymphatic ones.

Symptoms.—These should be carefully studied in order to diagnose this from other forms of colic requiring quite different treatment. Spasmodic colic always begins suddenly. If feeding, the horse is seen to stop abruptly, stamp impatiently, and probably look back. He soon evinces more acute pain, and this is shown by pawing, suddenly lying down, rolling, and getting up. During the period of pain the intestinal sounds, as heard by applying the ear over the flank, are louder than in health. There is then an interval of ease; he will resume feeding and appear to be entirely well. In a little while, however, the pains return and are increased in severity, only to again pass off for a time. As the attack progresses these intervals of ease become shorter and shorter, and pain may be continuous, though even now there are exacerbations of pain. Animals suffering from this form of colic evince the most intense pain; they throw themselves down, roll over and over, jump up, paw, or strike rather, with the front feet, steam and sweat, and make frequent attempts to pass urine. Only a small amount of water is passed at a time, and this is due to the bladder being so frequently emptied. These attempts to urinate are often regarded by horsemen as symptoms of trouble of the kindneys or bladder. In reality they are only one of the many ways in which the horse expresses the presence of pain. As a matter of fact, diseases of the bladder or kidneys of the horse are exceedingly rare.

To recapitulate, the symptoms of spasmodic colic: Keep in mind the history of the case, the type of horse, the suddenness of the attack, the increased intestinal sounds, the intervals of ease (which become of shorter duration as the case progresses), the violent pain, the normal temperature and pulse during the intervals of ease, the frequent attempts to urinate, etc., and there is but little danger of confounding this with other forms of colic.

Treatment.—Since the pain is due to spasm, or cramp, of the bowels, medicines that overcome spasms—antispasmodics—are the ones indicated. Chloral hydrate may be used. This is to be given in a dose of 1 ounce in a pint of water as a drench. As this drug is irritant to the throat and stomach, it has to be well diluted. A common and good remedy is sulphuric ether and laudanum; of each 2 ounces in a half pint of linseed oil. Another drench may be composed of 2 ounces each of sulphuric ether and alcohol in 8 ounces of water. If nothing else is at hand give whisky, one-half pint in hot water. Jamaica ginger is useful. If relief is not obtained in one hour from any of the above doses, they may be repeated. The body should be warmly clothed and perspiration induced. Blankets dipped in very hot water to which a small quantity of turpentine has been added should be placed around the belly and covered with dry blankets, or the abdomen may be rubbed with stimulating liniments or mustard water. The difficulty, however, of applying blankets and keeping them in place forces us in most instances to dispense with them. If the cramp is due to irritants in the bowels, a cure is not complete until there is given a cathartic of 1 ounce of aloes or 1 pint of linseed oil. Injections into the rectum of warm soapy water or salt and water aid the cure.

Rectal injections, clysters, or enemas, as a rule should be lukewarm, and from 3 to 6 quarts are to be given at a time. They may be repeated every half hour if necessary. Great care is to be taken not to injure the rectum in giving such injections. A large syringe or a piece of rubber hose 4 or 5 feet long, with a funnel attached at one end, affords the best means by which to give them. The pipe of the syringe or the hose introduced into the rectum must be blunt, rounded, and smooth. It is to be thoroughly oiled and then carefully pushed through the anus in a slightly upward direction. Much force must be avoided. If the horse can have a loose box or paddock, it is the best, as he will then take the exercise he wants. If the patient be extremely violent, it is often wise to restrain him by leading him with a halter since rupture of the stomach or displacements of the bowels may result and complicate the trouble.

THICK WIND AND ROARING.

Horses that are affected with a chronic disease that causes a loud unnatural noise in breathing are said to have thick wind, or to be roarers. This class does not include those affected with severe sore throat, as in these cases the breathing is noisy only during the attack of the acute disease.

Thick wind is caused by an obstruction to the free passage of the air in some part of the respiratory tract. Nasal polypi, thickening of the membrane, pharyngeal polypi, deformed bones, paralysis of the wing of the nostril, etc., are occasional causes. The noisy breathing of horses after having been idle and put to sudden exertion is not due to any disease and is only temporary. Very often a nervous, excitable horse will make a noise for a short time when started off, generally caused by the cramped position in which the head and neck are forced in order to hold him back.

Many other causes may occasion temporary, intermitting, or permanent noisy respiration, but chronic roaring is caused by paralysis of the muscles of the larynx; and almost invariably it is the muscles of the left side of the larynx that are affected.

In chronic roaring the noise is made when the air is drawn into the lungs; and only when the disease is far advanced is a sound produced when the air is expelled, and even then it is not near so loud as during inspiration.

In a normal condition the muscles dilate the aperture of the larynx by moving outward the cartilage and vocal cord, allowing a sufficient volume of air to rush through. But when the muscles are paralyzed the cartilage and vocal cord that are normally controlled by the affected muscles lean into the tube of the larynx, so that when the air rushes in it meets this obstruction and the noise is produced. When the air is expelled from the lungs its very force pushes the cartilage and vocal cords out, and consequently noise is not produced in the expiratory act.

The paralysis of the muscles is due to derangement of the nerve that supplies them with energy. The muscles of both sides are not supplied by the same nerve; there is a right and a left nerve, each supplying its respective side. The reason why the muscles on the left side are the ones usually paralyzed is owing to the difference in the anatomical arrangement of the nerves. The left nerve is much longer and more exposed to interference than the right nerve.

In chronic roaring there is no evidence of any disease of the larynx other than the wasted condition of the muscles in question. The disease of the nerve is generally located far from the larynx. Disease of parts contiguous to the nerve along any part of its course may interfere with its proper function. Enlargement of lymphatic glands within the chest through which the nerve passes on its way back to the larynx is the most frequent interruption of nervous supply, and consequently roaring. When roaring becomes confirmed, medical treatment is entirely useless, as it is impossible to restore the wasted muscle and at the time remove the cause of the interruption of the nervous supply. Before roaring becomes permanent the condition may be benefited by a course of iodide of potassium, if caused by disease of the lymphatic glands. Electricity has been used with indifferent success. Blistering or fireing over the larynx is, of course, not worthy of trial if the disease is due to interference of the nerve supply. The administration of strychnia (nux vomica) on the ground that it is a nerve tonic with the view of stimulating the affected muscles is treating only the result of the disease without considering the cause, and is therefore useless. The operation of extirpating the collapsed cartilage and vocal cord is believed to be the only relief, and, as this operation is critical and can only be performed by the skillful veterinarian, it will not be described here.

From the foregoing description of the disease it will be seen that the name "roaring," by which the disease is generally known, is only a symptom and not the disease. Chronic roaring is also in many cases accompanied by a cough. The best way to test whether a horse is a "roarer" is either to make him pull a load rapidly up a hill or over a sandy road or soft ground; or, if he is a saddle horse, gallop him up a hill or over soft ground. The object is to make him exert himself. Some horses require a great deal more exertion than others before the characteristic sound is emitted. The greater the distance he is forced, the more he will appear exhausted if he is a roarer; in bad cases the animal becomes utterly exhausted, the breathing is rapid and difficult, the nostrils dilate to the fullest extent, and the animal appears as if suffocation was imminent.

An animal that is a roarer should not be used for breeding purposes. The taint is transmissible in many instances.

Grunting.—A common test used by veterinarians when examining "the wind" of a horse is to see if he is a "gunter." This is a sound emitted during expiration when the animal is suddenly moved, or startled, or struck at. If he grunts he is further tested for roaring. Grunters are not always roarers, but, as it is a common thing for a roarer to grunt, such an animal must be looked upon with suspicion until he is thoroughly tried by pulling a load or galloped up a hill. The test should be a severe one. Horses suffering with pleurisy, pleurodynia, or rheumatism, and other affections accompanied with much pain, will grunt when moved, or when the pain is aggravated, but grunting under these circumstances does not justify the term of "gunter" being applied to the horse, as the gunting ceases when the animal recovers from the disease that causes the pain.

High Blowing.—This term is applied to a noisy breathing made by some horses. It is distinctly a nasal sound, and must not be confounded with "roaring." The sound is produced by the action of the nostrils. It is a habit and not an unsoundness. Contrary to roaring, when the animal is put to severe exertion the sound ceases. An animal that emits this sound is called a "high-blower." Some horses have naturally, very narrow nasal openings, and they emit sounds louder than usual in their breathing when exercised.

Whistling is only one of the variations of the sound emitted by a horse called a "roarer," and therefore needs no further notice, except to remind the reader that a whistling sound may be produced, during an attack of severe sore throat or inflammation of the larynx, which passes away with the disease that causes it.

HEAVES, BROKEN WIND, OR ASTHMA.

Much confusion exists in the popular mind in regard to the nature of heaves. Many horsemen loosely apply the term to all ailments where the breathing is difficult or noisy. Scientific veterinarians are well acquainted with the phenomena and locality of the affection, but there is a great diversity of opinion as regards the exact cause. Asthma is generally thought to be due to spasm of the small circular muscles that surround the bronchial tubes. The continued existence of this affection of the muscles leads to a paralysis of them and the forced breathing to emphysema, which always accompanies heaves.

Heaves is usually associated with disorder of the function of digestion or to an error in the choice of food. Feeding on clover hay or damaged hay or straw, too bulky and innutritious food, and keeping the horse in a dusty atmosphere or a badly ventilated stable produce or predispose to heaves. Horse brought from a high to a low level are predisposed.

In itself broken wind is not a fatal disease but death is generally caused by an affection closely connected with it. After death, if the organs are examined, the lesions found depend much upon the length of time broken wind has affected the animal. In recent cases very few changes are noticeable, but in animals that have been broken-winded for a long time the changes are well marked. The lungs are paler than natural, and of much less weight in proportion to the volume, as evidenced by floating them in water. The walls of the small bronchial tubes and the membrane of the larger tubes are tickened. The right side of the heart is enlarged and its cavities dilated. The stomach is enlarged and its walls stretched. The important change found in the lungs is a condition technically called pulmonary emphysema. This is of two varieties: First, what is termed vesicular emphysema, which consists of an enlargement of the capacity of the air cells (air vesicles) by dilation of their walls. The second form is called interlobular, or interstitial, emphysema, and follows the first. In this variety the air finds its way into the lung tissue between the air cells or the tissue between the small lobules.

Symptoms.—Almost every experienced horseman is able to detect heaves. The peculiar movement of the flanks and abdomen point out the ailment at once. But in recent cases the affected animal does not always exhibit the characteristic breathing unless exerted to a certain extent. The cough which accompanies this disease is peculiar to it. It is difficult to describe, but the sound is short, and something like a grunt. When air is inspired—that is, taken in—it appears to be done in the same manner as in health; it may possibly be done a little quicker than natural, but not enough to attract any notice. It is when the act of expiration (or expelling the air from the lungs) is performed that the great change in the breathing is perceptible. It must be remembered that the lungs have lost much of their elasticity, and in consequence, of their power of contracting on account of the degeneration of the walls of the air cells, and also on account of the paralysis of muscular tissue before mentioned. The air passes into them freely, but the power to expel it is lost to a great extent by the lungs; therefore the abdominal muscles are brought into play. These muscles, especially in the region of the flank, are seen to contract, then pause for a moment, then complete the act of contracting, thus baking a double bellowslike movement at each expiration, a sort of jerky motion with every breath. The double expiratory movement may also be detected by allowing the horse to exhale against the face or back of the hand. It will be observed that the expiratory current is not continuous, but is broken into two jets. When the animal is exerted a wheezing noise accompanies the breathing. This noise may be heard to a less extent when the animal is at rest if the ear be applied to the chest.

As before remarked, indigestion is often present in these cases. The animal may have a depraved appetite, as shown by a desire to eat dirt and soiled bedding, which he often devours in preference to the clean food in the trough or manger. The stomach is liable to be overloaded with indigestible food. The abdomen may assume that form called "pot-bellied." The animal frequently passes wind of a very offensive odor. When first put to work dung is passed frequently; the bowels are often loose. The animal cannot stand much work, as the muscular system is soft. Round-chested horses are said to be predisposed to the disease, and it is certain that in cases of long standing the chest usually becomes rounder than natural.

Certain individuals become very expert in managing a horse affected with heaves in suppressing the symptoms for a short time. They take advantage of the fact that the breathing is much easier when the stomach and intestines are empty. They also resort to the use of medicines that have a depressing effect. When the veterianrian is examining a horse for soundness, and he suspects that the animal has been "fixed," he usually gives the horse as much water as he will drink and then has him ridden or driven rapidly up a hill or on a heavy road. This will bring out the characteristic breathing of heaves if the horse is so afflicted, but will not cause the symptoms of heaves in a healthy horse. All broken-winded horses have the cough peculiar to the affection, but it is not regular. A considerable time may elapse before it is heard and then it may come on in paroxysms, especially when first brought out of the stable into the cold air, or when excited by work, or after a drink of cold water. The cough is usually the first symptom of the disease.

Treatment.—When the disease is established there is no cure for it. Proper attention paid too the diet will relieve the distressing symptoms to a certain extent, but they will undoubtedly reappear in their intensity the first time the animal overloads the stomach or is allowed food of bad quality. Clover hay or bulky food which contains but little nutriment have much to do with the cause of the disease, and therefore should be entirely omitted when the animal is affected, as well as before. It has been asserted that the disease is unknown where clover hay is never used. The diet should be confined to food of the best quality and in the smallest quantity. The bad effect of moldy or dusty hay, fodder, or food of any kind can not be overestimated. A small quantity of the best hay once a day is sufficient. This should be cut and dampened. The animal should invariably be watered before feeding; never directly after a meal. The animal should not be worked immediately after a meal. Exertion, when the stomach is full, invariably aggravates the symptoms. Turning on pasture gives relief. Carrots, potatoes, or turnips chopped and mixed with oats or corn are a good diet. Half a pint to a pint of thick, dark molasses with each feed is useful.

Arsenic is efficacious in palliating the symptoms. It is best administered in the form of the solution of arsenic, as Fowler's solution or as the white powdered arsenious acid. Of the former the dose is 1 ounce to the drinking water three times daily; of the latter one may give three grains in each feed. These quantities may be cautiously increased as the animal becomes accustomed to the drug. If the bowels do not act regularly, a pint of raw linseed oil may be given in the feed twice daily, so long as necessary. It must however, be borne in mind that all medical treatment is of secondary consideration; careful attention paid to the diet is of the greatest importance. Broken-winded animals should not be used for breeding purposes. A predisposition to the disease may be inherited.

THUMPS, OR SPASM OF THE DIAPHRAGM.

"Thumps is generally thought by the inexperienced to be a palpitation of the heart. While it is true that palpitation of the heart is sometimes called "thumps," it must not be confounded with the affection under consideration.

In the beginning of this article on the diseases of the organs of respiration, the diaphragm was briefly referred to as the principal and essential muscle of respiration. Spasmodic or irregular contractions of it in man are manifested by what is familiarly known as hiccoughs. Thumps in the horse is similar to hiccoughs in man, although the pecular noise is not made in the throat of the horse in all cases.

There should be no difficulty in distinguishing this affection from palpitation of the heart. The jerky motion affects the whole body, and is not confined to the region of the heart. If one hand is placed on the body at about the middle of the last rib, while the other hand is placed over the heart behind the left elbow, it will be easily demonstrated that there is no connection between the thuping or jerking of the diaphragm and the beating of the heart. In fact, when the animal is affected with spasms of the diaphragm the beating of the heart is usually much weaker and less perceptible than natural. Thumps is produced by causes similar to those that produce congestion of the lungs and dilatation or palpitation of the heart, and may occur in connection with these conditions. If not relieved, death usually results from congestion or edema of the lungs, as the breathing is interfered with by the inordinate action of this important muscle of inspiration so much that proper æration of the blood can not take place. The treatment should be as prescribed for congestion of the lungs, and, in addition, antispasmodics, such as 1 ounce of sulphuric ether in warm water or 3 drams of asafetida.

Treatment.—If the animal is attacked by the disease while on the road, stop him immediately. Do not attempt to return to the stables. If he is in the stable, make arrangements at once to insure an unlimited supply of pure air. If the weather is warm, out in the open air is the best place, but if too cold let him stand with head to the door. Let him stand still; he has all he can do, if he obtains sufficient pure air to sustain life. If he is encumbered with harness or saddle, remove it at once and rub the body with cloths or wisps of hay or straw. This stimulates the circulation in the skin, and thus aids in relieving the lungs of the extra quantity of blood that is stagnated there. If you have three or four assistants, let them rub the body and legs well until the skin feels natural; rub the legs until they are warm, if possible. When the circulation is reestablished, put bandages on the legs from the hoofs up as far as possible. Throw a blanket over the body and let the rubbing be done under the blanket. Diffusible stimulants are the medicines indicated—brandy, whisky or even ale or beer if nothing else is at hand), ether, and aromatic spirits of ammonia. Two ounces each of spirits of nitrous ether and alcohol, given as a drench diluted with a pint of water every hour until relief is afforded, is among the best remedies. Or, give a quarter of a pint of whisky in a pint of water every hour, or the same quantity of brandy as often, or a quart of ale every hour, or 1 ounce of tincture of arnica in a pint of water every hour until five or six doses have been given. If none of these remedies are at hand 2 ounces of oil of turpentine, shaken with a half pint of milk, may be given once, but not repeated. The animal may be bled from the jugular vein. Do not take more than 5 or 6 quarts from the vein, and do not repeat the bleeding. The blood thus drawn will have a tarry appearance.

RECURRENT OPHTHALMIA (PERIODIC OPHTHALMIA, OR MOONBLINDNESS).

This is an inflammatory affection of the interior of the eye, intimately related to certain soils, climates, and systems, showing a strong tendency to recur again and again, and usually ending in blindness from cataract or other serious injury.

Causes.—Its causes may be fundamentally attributed to soil. On damp clays and marshy grounds, on the frequently overflowed river bottoms and deltas, on the coasts of seas and lakes alternately submerged and exposed, this disease prevails extensively, and in many instances in France (Reynal), Belgium, Alsace (Zundel, Miltenberger), Germany, and England, it has very largely decreased under land drainage and improved methods of culture. Other influences, more or less associated with such soil, are potent causative factors. Thus damp air and a cloudy, wet climate, so constantly associated with wet lands, are universally charged with causing the disease. These act on the animal body to produce a lymphatic constitution with an excess of connective tissue, bones, and muscles of coarse open texture, thick skins and gummy legs covered with a profusion of long hair. Hence the heavy horses of Belgium and southwestern France have suffered severely from the affection, while high dry lands adjacent, like Catalonia, in Spain, and Dauphiny, Provence, and Languedoc, in France, have in the main escaped.

The rank aqueous fodders grown on such soils are other causes, but these again are calculated to undermine the character of the nervous and sanguineous temperament, and to superinduce the lymphatic. Other foods act by leading to constipation and other disorders of the digestive organs, thus impairing the general health; hence in any animal predisposed to this disease, heating, starchy foods, such as maize, wheat, and buckwheat, are to be carefully avoided. It has been widely charged that beans, pease, vetches, and other leguminosæ are dangerous, but a fuller inquiry contradicts this. If these are well grown they invigorate and fortify the system, while, like any other fodder, if grown rank, aqueous, and deficient in assimilable principles, they tend to lower the health and open the way for the disease.

The period of dentition and training is a fertile exciting cause, for though the malady may appear at any time from birth to old age, yet the great majority of victims are from two to six years old; and if a horse escapes the affection till after six there is a reasonable hope that he will continue to resist it. The irritation about the head during the eruption of the teeth, and while fretting in the unwonted bridle and collar, the stimulating grain diet and the close air of the stable all combine to rouse the latent tendency to disease in the eye, while direct injuries by bridle, whip, or hay seeds are not without their influence. In the same way local irritants, like dust, severe rain and snow storms, smoke, and acrid vapors are contributing causes.

It is evident, however, that no one of these is sufficient of itself to produce the disease, and it has been alleged that the true cause is a microbe, or the irritant products of a microbe, which is harbored in the marshy soil. The prevalence of the disease on the same damp soils which produce ague in man and anthrax in cattle has been quoted in support of this doctrine, as also the fact that the malady is always more prevalent coeteris paribus. In basins surrounded by hills where the air is still and such products are concentrated, and that a forest or simple belt of trees will, as in ague, at times limit the area of its prevalence. Another argument for the same view is found in the fact that on certain farms irrigated by town sewage this malady has become extremely prevalent, the sewage being assumed to form a suitable nidus for the growth of the germ. But on these sewage farms a fresh crop may be cut every fortnight, and the product is precisely that aqueous material which contributes to a lymphatic structure and a low tone of health. The presence in the system of a definite germ has not yet been proven, and in the present state of our knowledge we are only warranted in charging the disease to the deleterious emanations from the marshy soil in which bacterial ferments are constantly producing them.

Heredity is one of the most potent causes. The lymphatic constitution is of course transmitted and with it the proclivity to recurring ophthalmia. This is notorious in the case of both parents, male and female. The tendency appears to be stronger, however, if either parent has already suffered. Thus a mare may have borne a number of sound foals, and then fallen a victim to this malady, and all foals subsequently borne have likewise suffered. So with the stallion. Reynal even quotes the appearance of the disease in alternate generations, the stallion offspring of blind parents remaning sound through life and yet producing foals which furnish numerous victims of recurrent ophthalmia. On the contrary, the offspring of diseased parents removed to high, dry regions and furnished with wholesome, nourishing rations will nearly all escape. Hence the dealers take colts that are still sound or have had but one attack from the affected low Pyrenees (France) to the unaffected Catalonia (Spain), with confidence that they will escape, and from the Jura Valley to Dauphiny with the same result.

Yet the hereditary taint is so strong and pernicious that intelligent horsemen everywhere refuse to breed from either horse or mare that has once suffered from recurrent ophthalmia, and the French government studs not only reject all unsound stallions, but refuse service to any mare which has suffered with her eyes. It is this avoidance of the hereditary predisposition more than anything else that has reduced the formerly wide prevalence of this disease in the European countries generally. A consideration for the future of our horses would demand the disuse of all sires that are unlicensed, and the refusal of a license to any sire which has suffered from this or any other communicable constitutional disease.

Other contributing causes deserve passing mention. Unwholesome food and a faulty method of feeding undoubtedly predisposes to the disease, and in the same district the carefully fed will escape in far larger proportion than the badly fed. But it is so with every other condition which undermines the general health. The presence of worms in the intestines, overwork, and debilitating diseases and causes of every kind weaken the vitality and lay the system more open to attack. Thierry long ago showed that the improvement of close, low, dark, damp stables, where the disease had previously prevailed, practically banished this affection. Whatever contributes to strength and vigor is protective; whatever contributes to weakness and poor health is provocative of the disease in the predisposed subject.

Symptoms.—The symptoms vary according to the severity of the attack. In some cases there is marked fever, and in some slighter cases this may be almost altogether wanting, but there is always a lack of vigor and energy, bespeaking general disorder. The local symptoms are in the main those of internal ophthalmia, with, in many cases, an increased hardness of the eyeball from effusion into its cavity. The contracted pupil does not expand much in darkness, nor even under the action of belladonna. Opacity advances from the margin, over a part or whole of the cornea, but so long as it is transparent there may be seen the turbid, aqueous humor with or without flocculi, the dingy iris robbed of its clear black aspect, the slightly clouded lens and a greenish yellow reflection from the depth of the eye. From the fifth to the seventh day the flocculi precipitate in the lower part of the chamber, exposing more clearly the iris and lens and absorption commences, so that the eye may be cleared up in ten or fifteen days.

The characteristic of the disease is, however, its recurrence again and again in the same eye until blindness results. The attacks may follow each other at intervals of a month, more or less, but they show no relation to any particular phase of the moon as might be inferred from the familiar name, but are determined rather by the weather, the health, the food, or by some periodicity of the system. From five to seven attacks usually result in blindness, and then the second eye is liable to be attacked until it is also ruined.

In the intervals between the attack some remaining symptoms betray the condition, and these become more marked after each successive access of disease. Even after the first attack there is a bluish ring round the margin of the transparent cornea. The eye seems smaller than the other, at first because it is retracted in its socket, and often after several attacks because of actual shrinkage (atrophy). The upper eyelid, in place of presenting a uniform, continuous arch, has about one-third from its inner angle an abrupt bend, caused by the contraction of the levator muscle. The front of the iris has exchanged some of its dark, clear brilliancy for a lusterless yellow, and the depth of the eye presents more or less of the greenish yellow shade. The pupil remains a little contracted, except in advanced and aggravated cases, when, with opaque lens, it is widely dilated. If one eye only has suffered, as is common, the contrast in these respects with the sound eye is all the more characteristic. Another feature is the erect, attentive carriage of the ear, to compensate to some extent for the waning vision.

The attacks vary greatly in severity in different cases, but the recurrence is characteristic, and all alike lead to cataract and intraocular effusion, with pressure on the retina and abolition of sight.

Prevention.—The prevention of this disease is the great object to be aimed at, and this demands the most careful breeding, feeding, housing, and general management, as indicated under "Causes." Much can also be done by migration to a high, dry location, but for this and malarious affections the improvement of the land by drainage and good cultivation should be the final aim.

Treatment is not satisfactory, but is largely the same as for common internal ophthalmia. Some cases, like rheumatism, are benefited by scruple doses of powdered colchicum and 2 dram doses of salicylate of soda twice a day. In other cases, with marked hardness of the globe of the eye from intraocular effusion, aseptic puncture of the eye, or even the excision of a portion of the iris, has helped. During recovery a course of tonics (2 drams oxide of iron, 10 grains *nux vomica*, and 1 ounce sulphate of soda daily) is desirable to invigorate the system and help to ward off another attack. The vulgar resort to knocking out the wolf teeth and cutting out the haw can only be condemned. The temporary recovery would take place in one or two weeks, though no such thing had been done, and the breaking of a small tooth, leaving its fang in the jaw, only increases the irritation.

CATARACT.

The common result of internal ophthalmia, as of the recurrent type, may be recognized as described under the first of these diseases. Its offensive appearance may be obviated by extraction or depression of the lens, but as the rays of light would no longer be properly refracted, perfect vision would not be restored, and the animal would be liable to prove an inveterate shyer. If perfect blindness continued by reason of pressure on the nerve of sight, no shying would result.

PALSY OF THE NERVE OF SIGHT, OR AMAUROSIS.

Causes.—The causes of this affection are tumors or other diseases of the brain implicating the roots of the optic nerve, injury to the nerve between the brain and eye, and inflammation of the optic nerve within the eye (retina), or undue pressure on the same from dropsical or inflammatory effusion. It may also occur from overloaded stomach, from a profuse bleeding, and even from the pressure of the gravid womb in gestation.

Symptoms.—The symptoms are wide dilation of the pupils, so as to expose fully the enterior of the globe, the expansion remaining the same in light and darkness. Ordinary eyes when brought to the light have the pupils suddenly contract, and then dilate and contract alternately until they adapt themselves to the amount of light. The horse does not swerve when a feint to strike is made unless the hand causes a current of air. The ears are held erect and turn quickly toward any noise, and the horse steps high to avoid stumbling over objects which it can not see.

Treatment is only useful when the disease is symptomatic of some removable cause, like congested brain, loaded stomach, or gravid womb. When recovery does not follow the termination of these conditions, apply a blister behind the ear and give one-half dram doses of *nux vomica* daily.

TUMORS OF THE EYEBALL.

A variety of tumors attack the eyeball—dermoid, papillar, fatty, cystic, and melanotic—but perhaps the most frequent in the horse is encephaloid cancer. This may grow in or on the globe, the haw, the eyelid, or the bones of the orbit, and is only to be remedied, if at all, by early and thorough excision. It may be distinguished from the less dangerous tumors by its softness, friability, and great vascularity, bleeding on the slightest touch, as well as by its anatomical structure.

STAPHYLOMA.

This consists in a bulging forward of the cornea at a given point by the saccular yielding and distention of its coats, and it may be either transparent or opaque and vascular. In the last form the iris has become adherent to the back of the cornea, and the whole structure has become filled with blood vessels. In the first form the bulging cornea is attenuated; in the last it may be thickened. The best treatment is by excision of a portion of the rise so as to relieve the intraocular pressure.

PARASITES IN THE EYE.

Acari in the eye have been incidentally alluded to under inflammation of the lids.

Filaria Palpebralis is a white worm, one-half to one inch long, which inhabits the lachrymal duct and the underside of the eyelids and haw in the horse, producing a verminous conjunctivitis. The first step in treatment in such cases is to remove the worm with forceps, then treat as for external inflammation.

Filaria Equina is a delicate, white, silvery-looking worm, which I have repeatedly found 2 inches in length (a length as great as 5 inches have been reported). It invades the aqueous humor, where its constant active movements make it an object of great interest, and it is frequently exhibited as a "snake in the eye." It is found also in other internal cavities of the horse, to which it undoubtedly makes its way from the food, and especially the water swallowed, and its prevention is therefore to be sought mainly in the supply of pure water from closed deep wells. When present in the eye it causes inflammation and has to be removed through an incision made with the lancet in the upper border of the cornea close to the sclerotic, the point of the instrument being directed slightly forward to avoid injury to the iris. Then apply cold water or astringent antiseptic lotions.

Filaria Conjunctivae, resembling *Filaria Equina* very much in size and general appearance, is another round worm which has been found in the eye of the horse.

The *Echinococcus*, the systic, or larval stage of the echinococcus tapeworm of the dog, has been found in the eye of the horse and a cysticercus (*Cysticercus Fistularis?*) is also reported.

HARNESS GALLS (*Sitfasts*).

Wounds or abrasions of the skin are frequently caused by ill-fitting harness or saddles. When a horse has been resting from steady work for some time, particularly after being kept idle in a stable on a scanty allowance of grain, as in winter, he is soft and tender and sweats easily when put to work again. In this condition he is apt to sweat and chafe under the harness, especially if it is hard and poorly fitted. This chafing is likely to cause abrasions of the skin, and thus pave the way for an abscess, or for a chronic blemish, unless attended to very promptly. Besides causing the animal considerable pain, chafing, if long continued, leads to the formation of a callosity. This may be superficial, involving only the skin, or it may be deep-seated, involving the subcutaneous fibrous tissue and sometimes the muscle and even the bone. This causes a dry slough to form, which is both inconvenient and unsightly. Sloughs of this kind are commonly called "sitfasts" and, while they occur in other places are most frequently found under the saddle.

Treatment.—Abrasions are best prevented by bringing the animal gradually into working shape after it has had a prolonged rest, in order that the muscles will be hard and the skin tough. The harness should be well fitted, neither too large nor too small, and it should be cleaned and oiled to remove all dirt and to make it soft and pliable. Saddles should be properly fitted so as to prevent direct pressure on the spine, and the saddle blankets should be clean and dry. Parts of the horse where chafing is likely to occur, as on the back under the saddle, should be cleaned and brushed free of dirt.

The remedies for simple harness galls are numerous. Among them may be mentioned alcohol, 1 pint, in which are well shaken the whites of two eggs; a solution of nitrate of silver, 10 grains to the ounce of water; sugar of lead or sulphate of zinc, 20 grains to an ounce of water; carbolic acid, 1 part in 15 parts of glycerin, and so on almost without end. Any simple astringent wash or powder will effect a cure, provided the sores are not irritated by friction.

If a sitfast has developed, the dead horn-like slough must be carefully dissected out and the wound treated carefully with antiseptics. During treatment it is always best to allow the animal to rest, but if this is inconvenient care should be taken to prevent injury to the abraded or wounded surface by padding the harness so that chafing can not occur.

FISTULAS.

Definition.—The word fistula is applied to any ulcerous lesion upon the external surface of the body which is connected by ducts, or passages, with some internal cavity. Because of this particular formation the term fistulous tract is often used synonymously with the word fistula. Fistulas may exist in any part of the body, but the name has come to be commonly accepted as applicable only to such lesions when found upon the withers. Poll evil is a fistula upon the poll, and in no sense differs from fistulous withers except in location. The description of fistula will apply, then, in the main, to poll evil equally well. Quittor presents the characteristic tubular passages of a fistula and may therefore be considered and treated as fistula of the foot. Fistulous passages may also be developed upon the sides of the face, through which saliva is discharged instead of flowing into the mouth, and are called salivary fistulas. A dental fistula may arise from the necrosis of the root of a tooth. Again, a fistula is sometimes noted at the umbilicus associated with hernia, and recto-vaginal fistulas have been developed in mares following difficult parturition. Fistulas may arise from wounds of glandular organs or their ducts, and thus we have the so-called mammary, or lachrymal, fistulas.

Fistulous tracts are lined with a false, or adventitious, membrane and show no disposition to heal. They constantly afford means of exit to the pus or ichorous material discharged by the unhealthy parts below. They are particularly liable to develop at the withers or poll because of the exposed position which these parts occupy, and, having once become located there, they usually assert a tendency to further extension, because the vertical and laminated formation of the muscles and tendons of these parts allows the forces of gravitation to assist the pus in gaining the deeper lying structures and also favors its retention among them.

Causes.—Fistulas follow as a result of abscesses, bruises, wonuds, or long-continued irritation by the harness. Among the more common causes of fistula of the poll (poll evil) are chafing by the halter or heavy bridle; blows from the butt end of the whip; the horse striking his head against the hayrack, beams of the ceiling, low doors, etc. Fistulous withers are seen mostly in those horses that have thick necks as well as those that are very high in the withers, or, among saddle horses, those that are very low on the withers, the saddle here riding forward and bruising the parts. They are often caused by bad-fitting collars or saddles, by direct injuries from blows, and from the horse rolling upon rough or sharp stones. In either of these locations ulcers of the skin, or simple abscesses, if not properly and punctually treated, may become fistulas. The pus burrows and finds lodgment deep down between the muscles, and escapes only when the sinus becomes surcharged or when, during motion of the parts, the matter is forced to the surface.

Symptoms.—These, of course, will vary according to the progress made by the fistula. Following an injury we may often notice soreness or stiffness of the front legs, and upon careful examination of the withers we will see small tortous lines running from the point of irritation downward and backward over the region of the shoulder. These are superficial lymphatics, and are swollen and painful to the touch. In a day or two a swelling is noticed on one or both sides of the dorsal vertebraw, which is hot and painful and rapidly enlarging. The stiffness of the limbs may disappear at the time, and the heat and soreness of the parts may become less noticeable, but the swelling remains and continues to enlarge.

A fistulous ulcer of the poll may be first indicated by the opposition which the animal offers to the application of stable brush or bridle. At this time the parts are so sore and sensitive that there is some danger that the patient will acquire disagreeable stable habits unless handled with the greatest care. The disease in its early stages may be recognizd as a soft, fluctuating tumor surrounded by inflammatory swelling, with the presence of enlarged lymphatic vessels and stiffness of the neck. Later the inflammation of the surrounding tissues may disappear, leaving a prominent tumor. The swelling, whether situated upon the head or the withers, may open and form a running ulcer, or its contents may dry up and leave a tumor which gradually develops the common characteristics of a fibrous tumor. When the enlargment has opened we should carefully examine its cavity, as upon its condition will wholly depend our treatment.

Treatment.—In the earliest stage, when there is soreness, enlarged lymphatics, but no well marked swelling, the trouble may frequently be aborted. To do this requires both general and local treatment. A physic should be given, and the horse receive 1 ounce of powdered saltpeter three times a day in his water or feed. If the fever runs high, 20-drop doses of tincture of aconite root every two hours may be administered. The local application of cold water to the inflamed spot for an hour at a time three or four times a day has often proved very beneficial, and has afforded great relief to the patient.

Cooling lotions, muriate of ammonia, or saltpeter and water; sedative washes, such as tincture of opium and aconite, chloroform liniment, or camphrated oil, are also to be frequently applied. Should this treatment fail to check the progress of the trouble, the formation of pus should be hastened as rapidly as possible. Hot fomentations and poultices are to be constantly used, and as soon as the presence of pus can be detected, the abscess wall is to be opened at its lowest point. In this procedure lies our hope of a speedy cure. As with any simple abscess, if drainage can be so provided that the pus will run off as fast as formed without remaining within the interstices of the tissues, the healing which follows will be rapid and satisfactory.

Attention is again called to the directions given above as to the necessity of probing the cavity when opened. If upon a careful examination with the probe we find that there are no pockets, no sinuses, but a simple, regular abscess wall, the indication for treatment is to make an opening from below so that the matter must all escape. Rarely is anything more needed than to keep the orifice open and to bathe or inject the parts with some simple antiseptic wash that is not irritant or caustic. A low opening and cleanliness constitute the essential and rational treatment.

If the abscess has already opened, giving vent to a quantity of purulent matter, and the pipes and tubes leading from the opening are found to be extensive and surrounded with thick fungoid membranes, there is considerable danger that the internal ligaments or even some of the bones have become affected, in which case the condition has assumed a serious aspect. Or, on the other hand, if the abscess has existed for some time without a rupture, its contents will frequently be found to consist of dried purulent matter, firm and dense, and the walls surrounding the mass will be found greatly thickened. In such a case we must generally have recourse to the application of caustics which will cause a sloughing of all of the unhealthy tissue, and will also stimulate a rapid increase of healthy organized material to replace that destroyed in the course of the development and treatment of the disease. Threads or cords soaked in gum-arabic solution and rolled in powdered corrosive sublimate may be introduced into the canal and allowed to remain. The skin on all parts of the shoulder and leg beneath the fistula should be carefully greased with lard or oil, as this will prevent the discharge that comes from the opening after the caustic is introduced from irritating or blistering the skin over which it flows. In obstinate cases a piece of caustic potash (fused) one to two inches in length may be introduced into the opening and should be covered with oakum or cotton. The horse should then be secured so that he can not reach the part with his teeth. After the caustic plug has been in place for twenty-four hours, it may be removed and hot fomentations applied. As soon as the discharge has become again established the abscess should be opened from its lowest extermity, and the passage thus formed may be kept open by the introduction of a seton. If the pipes become established in the deep tissues beneath the shoulder blade or among the spines of the vertebral column, it will often be found impossible to provide proper drainage for the abscess from below, and treatment must consist of caustic solutions carefuly injected into all parts of the suppurating sinuses. A very effective remedy for this purpose consists of 1 ounce of chloride of zinc in half a pint of water, injected three times a week, after which a weak solution of the same may be occasionally injected. Injections of Villate's solution or alcoholic solution of corrosive sublimate, strong carbolic acid, or possibly oil of turpentine will also prove beneficial. Pressure should be applied from below, and endeavors made to heal the various pipes from the bottom.

Should the swelling become general, without forming a well-defined tumor, the placing of 20 to 30 grains of arsenious acid, wrapped in a single layer of tissue paper, in a shallow incision beneath the skin will often produce a sloughing of the affected parts in a week or ten days, after which the formation of healthy tissue follows. The surrounding parts of the skin should be protected from any damage from escaping caustics by the application of lard or oil, as previously suggested.

Although the successful treatment of fistulas requires time and patience, the majority of cases are curable. The sinuses must be opened at their lowest extremity and kept open. Caustic applications must be thoroughly used once or twice, after which mild astringent antiseptic washes should be persistently used until a cure is reached.

It sometimes happens that the erosions have burrowed so deeply or in such a direction that the opening of a drainage passage becomes impracticable. In other cases the bones may become attacked in some inaccessible location, or the joints may be affected, and in these cases it is often best to destroy the horse at once.

The reappearance of the fistula after it has apparently healed is not uncommon. The secondary attack in these cases is seldom serious. The lesion should be carefully cleansed and afterwards injected with a solution of zinc sulphate, 20 grains to the ounce of water, every second or third day until a cure is effected.

In fistula of the foot we see the same tendency toward the burrowing of pus downward to lower structure, or in some cases upward toward the coronet. Prior to the development of a quittor there is always swelling at the coronet, accompanied by heat and pain. Every effort should now be made to prevent the formation of an abscess at the point of injury. Wounds caused by nails, gravel or any other foreign body which may have become lodged in the sole of the foot should be opened at once from below so as to allow free exit to all purulent discharges. Should the injury have occurred directly to the coronet the application of cold fomentations may prove efficient in preventing the formation of an abscess.

When a quittor becomes fully established it should be treated precisely as a fistula situated in any other part of the body; that is, the sinuses should all be opened from their lowest extremities so as to afford constant drainage. All fragments of diseased tissue should be trimmed away, antiseptic solutions injected, and, after covering the wound with a pad of oakum saturated with some good antiseptic wash, the whole foot may be carefully covered with clean bandages, which will afford valuable assistance to the healing process by excluding all dirt from the affected part.

WOUNDS AND THEIR TREATMENT.

Description of Wounds.—A wound is an injury to any part of the body involving a solution of continuity or disruption of the affected parts and is caused by violence, with or without laceration of the skin. In accordance with this definition we have the following varieties of wounds: Incised, punctured, contused, lacerated, gunshot, and poisoned. They may further be classified as superficial, deep, or penetrating, and also as unclean, if hair, dirt, or splinters of wood are present; as infected, when contaminated with germs; and as aseptic, if the wound does not contain germs.

An incised wound is a simple cut made with a sharp body, like a knife, producing merely a division of the tissues. The duller the body, the more force is required, the more tissues destroyed, and a greater time will be required for healing. In a cut wound the edges are even and definite, while those of a lacerated wound are irregular and torn. Three conditions are present as a result of an incised wound: (1) Pain, (2) hemorrhage, (3) gaping of the wound. The first pain is due to the crushing of the nerve fibers. In using a sharp knife and by cutting quickly the animal suffers less pain and healing occurs more rapidly. The secondary pain is usually due to the action of the air and inflammatory processes. When air is kept from the wound pain ceases soon after the lesion is produced. Hemorrhage is absent only in wounds of nonvascular tissues, as the cornea of the eye, the cartilage of joints, and other similar structures. Bleeding may be from the arteries, veins, or capillaries. In the latter form of bleeding the blood oozes from the part in drops. Hemorrhage from the veins is dark red and issues in a steady stream without spurting. In arterial bleeding the blood is bright red and spurts with each heart beat. This latter variety of hemorrhage is the most dangerous, and should be stopped at once before attempting any further treatment. Bleeding from small veins and capillaries ceases in a short time spontaneously, while larger vessels, especially arteries, require some form of treatment to cause complete stoppage of the hemorrhage.

HEMOSTASIA.

By this term is meant the checking of the flow of blood. It may be accomplished by several methods, such as compress bandages, torison, hot iron, and ligatures. The heat from a hot iron will cause the immediate clotting of the blood in the vessels, and this clot is further supported by the production of a scab, or crust, over the portion seared. The iron should be at a red heat. If at a white heat, the tissue is charred, which makes it brittle and the bleeding is apt to be renewed. If the iron is at a black heat, the tissues will stick to the iron and will pull away from the surface of the wound. Cold water and ice bags quickly stop capillary bleeding, while hot water is preferable in more excessive hemorrhages. Some drugs, called styptics, possess the power of contracting the walls of blood vessels and also of clotting the blood. A solution of the chloride of iron placed on a wound alone or by means of cotton drenched in the liquid produces a rapid and hard clot. Tannic acid, alum, acetic acid, alcohol, and oil of turpentine are all more or less active in this respect. To check bleeding from large vessels compression may be adopted. When it is rapid and dangerous and from an artery, the fingers may be used for pressing between the wound and the heart (digital compression), but if from a vein, the pressure should be exerted on the other side of the wound. Tourniquet may also be used by passing a strap around the part and tightening after placing a pad over the hemorrhage. The rubber ligature has now replaced the tourniquet and is bound tightly around the limb to arrest the bleeding. Tampons, such as cotton, tow or oakum, may be packed tightly in the wound and then sewed up. After remaining there for twenty-four or forty-eight hours they are removed. Bleeding may sometimes be easily checked by passing a pin under the vessel and by taking a horse-hair and forming a figure 8 by running it above and below the pin, thus causing pressure on the vessel. Torsion is the twisting of the blood vessel until the walls come together and form a barrier to the flow of blood. It may be accomplished by the fingers, forceps, or by running a pin through the vessel, turning it several times, and then running the point into the tissue to keep it in a fixed position.

Ligation is the third method for stopping a hemorrhage. Seize the blood vessel with the artery forceps, pass a clean thread of silk around it, and tie about one-half inch from its end. The silk should be sterilized by placing it in an antiseptic solution so as not to impede the healing process or cause blood poisoning or lockjaw, which often follows the ligation of a vein with unsterilized material. Sometimes it will be impossible to reach the bleeding vessel, so it is necessary to pass the ligature around a mass of tissue which includes the blood vessel. Ligation is the most useful method of arresting hemorrhage, since it disturbs healing least and gives the greatest security against secondary hemorrhage.

SUTURES.

After the bleeding has been controlled and all foreign bodies removed from the wound, the gaping of the wound is noticeable. It is caused by the contraction of the muscles and elastic fibres, and its degree depends on the extent, direction, and nature of the cut. This gaping will hinder the healing process so that it must be overcome by bringing the edges together by some sort of sultures or pins, or by a bandage applied from below upward. As suture material, ordinary cotton thread is good if well sterilized, as is also horsehair, catgut, silk, and various kinds of wire. If sulture is made too light, the subsequent swelling may cause the stitch to tear out. In order to make a firm suture the depth of the stitch should be the same as the distance the stitch is from the edge of he wound. The deeper the suture is the more tissue is embraced and the fewer the number of stitches required. In tying a suture use the square or reef knot. Closure of wounds by means of adhesive plaster, collodion, and metal clamps is not practiced to any great extent in veterinary practice.

PROCESS OF HEALING.

In those cases where perfect stoppage of bleeding, perfect coaptation of the edges of the wound, and perfect cleanliness are obtained, healing occurs within three days, without the formation of granulations, pus, or proud flesh, by what is termed first intention. If wounds do not heal in this manner they will gap somewhat and become warm and painful. Healing then occurs by granulation or suppuration, which is termed healing by second intention. The sides of the wound become covered with granulation tissue which may fill the wound and sometimes overlap the lips, forming a fungoid growth called proud flesh. Under favorable conditions the edges of the wound appear to grow together by the end of the first week, and the whole surface gradually becomes dry, and finally covered with pigmented skin, when the wound is healed. The cause of pus formation in wounds is usually due to the presence of germs. For this reason the utmost care should be adopted to keep clean wounds aseptic, or free from germs, and to make unclean wounds antiseptic by using antiseptic fluids to kill the microbes present in the wound. The less the injurious action of this fluid on the wound, and the greater its power to kill germs, the more valuable it becomes. All antiseptics are not equally destructive, and some germs are more susceptible to one antiseptic than to another. The most important are (1) bichloride of mercury, which is to be preferred on horses. It becomes weakened in its action if placed in a wooden pail or on an oily or greasy surface. It is used in the strength of 1 part of bichloride to 1,000 to 5,000 parts of water, according to the delicacy of the tissues to which it is applied. (2) Carbolic acid in from 2 to 5 per cent solution is used on infected wounds and for cleaning instruments, dressing, and sponges. It unites well with oil and is preferred to the bichloride of mercury on a greasy surface. A 5 per cent solution in oil is often used under the name of carbolized oil. (3) Aluminum acetate is an efficient and cheap antiseptic, and is composed of 1 part alum and 5 parts acetate of lead, mixed in 20 parts of water. (4) Boracic acid is good in a 2 to 4 per cent solution to cleanse wounds and wash eyes. Creolin and lysol may be used in a 2 to 5 per cent solution in water. Iodoform is one of the most used of the antiseptics and it also acts as an anodyne, stimulates granulation, and checks wound secretion. A very efficacious and inexpensive powder is made by taking 5 parts of iodoform and 95 parts of sugar, making what is called iodoform sugar. Tannic acid is a useful drug in the treatment of wounds, in that it arrests hemorrhage, checks secretion, and favors the formation of a scab. A mixture of 1 part tannic acid and 3 parts iodoform is good in suppurating wounds. Iodol, white sugar, ground and roasted coffee, and powdered charcoal are all used as protectives and absorbents on suppurating surfaces. More depends on the care and the method of application of the drug than on the drug itself. On aseptic wounds use only those antiseptics that do not irritate the tissue. If care is used in the application of the antiseptic, corrosive sublimate or carbolic acid is to be recommended, but in the hands of irresponsible parties lysol or creolin is safer. In order to keep air from the wound and to absorb all wound secretions rapidly, a dressing should be applied. If the wound is aseptic, the dressing should be likewise, such as cotton gauze, sterile cotton, oakum, or tow. This dressing should be applied with uniform pressure at all times and secured by a bandage. Allow it to remain for a week or ten days if the wound is aseptic or if the dressing does not become loose or misplaced or become drenched with secretions from the wound, or if pain, fever, or loss of appetite does not develop. The dressing should then be removed, the wound treated antiseptically, and a sterilized dressing applied.

HEALING UNDER A SCAB.

This often occurs in small superficial wounds that have been kept aseptic. In order for a scab to form, the wound must not gap, secrete freely, or become infected with germs. The formation of scab is favored by astringents and styptics, such as tannic acid, iodoform, and 5 per cent solution of zinc chloride. In case of large hollow wounds that can not be dressed, such as fistulous withers, open joints, etc., antisepsis may be obtained by warm water irrigation with or without an antiseptic fluid. It should continue day and night, and never be interrupted for more than eight hours, for germs will then have gained headway and will be difficult to remove. Four or five days of irrigation will be sufficient, for granulations will then have formed and pus will remain on the outside if it forms. For permanent irrigation the stream should be very small, or drop by drop, but should play over the entire surface of the wound. It is always better to heal an infected wound under a scab, or treat it as an open wound, than it is to suture the wound, thus favoring the growth of the inclosed germs and retarding ultimate healing. In the latter case pus may develop in the wound, form pockets by sinking into the tissues, and cause various complications. Such pockets should be well drained either through incisions at the bottom or by drainage tubes or setons. They should then be frequently syringed out or continuously irrigated. In case proud flesh appears it should be kept down either by pressure or by caustics, as powdered bluestone, silver nitrate, chloride of antimony, or by astringents, such as burnt alum. If they prove resistant to this treatment they may be removed by scissors or the knife or by searing with the hot iron. The following rules for the treatment of wounds should be followed: (1) See that the wound is clean, removing all foreign bodies. (2) For this purpose use a clean finger rather than a probe. (3) Arrest all hemorrhage before closing the wound. (4) Antiseptics should only be used if you suspect the wound to be infected. (5) When pus is present treat without closing the wound. (6) This may be accomplished by drainage tubes, absorbent dressings, setons, or continuous irrigations. (7) Protect the wound against infection while healing.

LACERATED AND CONTUSED WOUNDS.

Lacerated and contused wounds may be described together, although there is, of course, this difference, that in contused wounds there is no break or laceration of the skin. Lacerated wounds, however, are as a rule, also contused—the surrounding tissues are bruised to a greater or lesser extent. While such wounds may not appear at first sight to be as serious as incised wound, they are commonly very much more so. Lacerations and contusions, when extensive, are always to be regarded as dangerous. Many horses die from septic infection or mortification as a result of these injuries. We find in severe contusions and infiltration of blood into the surrounding tissues; disorganization and mortification follow, and involve often the deeper seated structures. Abscesses, single or multiple, may also result and call for specail treatment.

In wounds that are lacerated the amount of hemorrhage is mostly inconsiderable; even very large blood vessels may be torn apart without inducing a fatal result. The edges of the wound are ragged and uneven. These wounds are produced by barbed wire or some blunt object, as where a horse runs against fences, board piles, the corners of buildings, or where he is struck by the pole or shafts of another team, falling on rough or irregular stones, etc.

Contused wounds are caused by blunt instruments moving with sufficient velocity to bruise and crush the tissues, as running against objects, kicks, or falling on large, hard masses.

Treatment.—In lacerated wounds great care must at first be exercised in examining or probing to the very bottom of the rent or tear, to see if any foreign body be present. Very often splinters of wood or bits of stone or dirt are thus lodged, and unless removed prevent the wound from healing; or if it should heal the wound soon opens again, discharging a thin, gluey matter that is characteristic of the presence of some object in the part. After a thorough exploration these wounds are to be carefully and patiently fomented with warm water, to which has been added carbolic acid in the proportion of 1 part to 100 of water. Rarely, if ever, are stitches to be inserted in lacerated wounds. The surrounding tissues and skin are so weakened in vitality and structure by the contusions that stitches will not hold; they only irritate the parts. It is better to endeavor to secure coaptation by means of bandages, plasters, or collodion. One essential in the treatment of lacerated wounds is to secure a free exit for the pus. If the orifice of the wound is too high, or if pus is found to be burrowing in the tissues beneath the opening, we must then make a counter opening as low as possible. This will admit of the wound being thoroughly washed out, at first with warm water, and afterwards injected with some mild astringent and antiseptic wash, as chloride of zinc, 1 dram to a pint of water. A dependent opening must be maintained until the wound ceases to discharge. Repeated hot fomentations over the region of lacerated wounds afford much relief and should be persisted in.

BRUISES.

Bruises are nothing but contused wounds where the skin has not been ruptured. There is often considerable solution of continuity of the parts under the skin, subcutaneous hemorrhage, etc., which may result in local death (mortification) and slough of the bruised parts. If the bruise or contusion is not so severe, many cases are quickly cured by constant fomentation with hot water for from two to four hours. The water should be allowed about this time to gradually become cool and then cold. Cold fomentation must then be kept up for another hour or two. Dry parts thoroughly and quickly and bathe them freely with camphor 1 ounce, sweet oil 8 ounces, or with equal parts of lead water and laudanum. A dry, light bandage should then be applied, the horse allowed to rest, and if necessary the treatment may be repeated each day for two or three days. If, however, the wound is so severe that sloughing must ensue, we should encourage this by poultices made of linseed meal, wheat bran, turnips, onions, bread and milk, or hops. Charcoal is to be sprinkled over the surface of the poultice when the wound is bad smelling. After the slough has fallen off the wound is to be dressed with warm antiseptic washes of carbolic acid, chloride of zinc, permanganate of potash, etc. If granulating (filling up) too fast, use burnt alum or air-slaked lime. Besides this local treatment we find that the constitutional symptoms of fever and inflammation call for measures to prevent or control them. This is best done by placing the injured animal on soft or green food. A physic of Barbados aloes, 1 ounce, should be given as soon as possible after the accident. Sedatives, such as tincture of aconite root, 15 drops, three times a day, or ounce doses of saltpeter every four hours, may also be administered. When the symptoms of fever are abated, and if the discharges from the wound are abundant, the strength of the patient must be supported by good food and tonics. One of the best tonics is as follows: Powdered sulphate of iron, powdered gentian, and powdered ginger, of each four ounces. Mix thoroughly and give a heaping tablespoonful twce a day, on the feed or as a drench.

PUNCTURED WOUNDS.

Punctured wounds are produced by the penetration of a sharp or blunt pointed substance, such as a thorn, fork, nail, etc., and the orifice of these wounds is always small in proportion to their depth. In veterinary practice punctured wounds are much more common than the others. They involve the feet most frequently, next the legs, and often the head and face from nails protruding through the stalls and trough. They are not only the most frequent, but they are also the most serious, owing to the difficulty of obtaining thorough disinfection. Another circumstance rendering them so is the lack of attention that they first receive. The external wound is so small that but little or no importance is attached to it, yet in a short time swelling, pain, and acute inflammation, often of a serious character, are manifested.

Considering the most common of the punctured wounds, we must give precedence to those of the feet. Horses worked in cities, about iron works, around building places, etc., are most likely to receive "nails in the feet." The animal treads upon nails, pieces of iron or screws, and forces them into the soles of the feet. If the nail, or whatever it is that has punctured the foot, is fast in some large or heavy body, and is withdrawn as the horse lifts his foot, lameness may last for only a few steps; but unless properly attended to at once he will be found in a day or two to be very lame in the injured member. If the foreign body remains in the foot, he gradually grows worse from the time of puncture until the cause is discovered and removed. If, when shoeing, a nail is driven into the quick (sensitive laminae) and allowed to remain, the horse gradually evinces more pain from day to day; but if the nail has at once been removed by the smith, lameness does not, as a rule, show itself for some days or, if the nail is simply driven "too close," not actually pricking the horse, he may not show any lameness for a week or even much longer. At this point it is due the blacksmith to say that, considering how thin the walls of some feet are, the uneasiness of many horses while shoeing, the ease with which a nail is diverted from its course by striking an old piece of nail left in the wall, or from the nail itself splitting, the wonder is not that so many horses are pricked or nails driven "too close," but rather that many more are not so injured. It is not always carelessness or ignorance on the part of the smith, by any means, that is to account for this accident. Bad and careless shoers we do meet with, but let us be honest and say that the rarity of these accidents points rather to the general care and attention given by these much-abused mechanics.

From the construction of the horse's foot (being incased in an impermeable horny box), and from the elasticity of the horn closing the orifice, punctured wounds of the feet are almost always productive of lameness. Inflammation results, and as there is no relief afforded by swelling and no escape for the product of inflammation, this matter must and does burrow between the sole or wall and the sensitive parts within it until it generally opens "between hair and hoof." We can thus see why pain is so much more severe, why tetanus (lock-jaw) more frequently follows wounds of the feet, and why, from the extensive, or at times complete, separation and "casting" of the hoof, these wounds must always be regarded with grave apprehension.

Symptoms and Treatment.—A practice which, if never deviated from—that of picking up each foot, cleaning the sole, and thoroughly examining the foot each and every time the horse comes into the stable—will enable us to reduce the serious consequences of punctured wounds of the feet to be the minimum. If the wound has resulted from pricking, lameness follows soon after shoeing; if from the nails being driven too close, it usually appears from four to five days or a week after receiving the shoe. We should always inquire as to the time of shoeing, examine the shoe carefully, and see whether it has been partially pulled and the horse stepped back upon some of the nails or the clip. The pain from these wounds is lancinating; the horse is seen to raise and lower the limb or hold it from the ground altogether; aften he points the foot, flexes the leg, and knuckles at the fetlock. Swelling of the fetlock and back tendons is also frequently seen and is apt to mislead us. The foot must be carefully examined, and this cannot be properly done without removing the shoe. The nails should be drawn separately and carefully examined. If there is no escape of pus from the nail holes, or if the nails themselves are not moist, we must continue our examination of the foot by carefully pinching or tapping it at all parts. With a little practice we can detect the spot where pain is the greatest or discover the delicate line of scar left at the point of entrance of the foreign body. The entire sole is then to be thinned, after which we are to carefully cut down upon the point where pain is greatest upon pressure, and, finally, through the sole at this spot. When the matter has escaped, the sole, so far as it was undermined by pus, is to be removed. The foot must now be poulticed for one or two days and afterwards dressed with a compress of oakum saturated with carbolic acid solution or other antiseptic dressing.

If we discover a nail or other object in the foot, the principal direction, after having removed the offending body, is to cut away the sole, in a funnel shape, down to the sensitive parts beneath. This is imperative, and if a good free opening has been made and is maintained for a few days, hot fomentations and antiseptic dressings applied, the cure is mostly easy, simple, quick, and permanent. The horse should be shod with a leather sole under the shoe, first of all applying tar and oakum to prevent any dirt from entering the wound. In some instances nails may puncture the flexor tendons, the coffin bone, or enter the coffin joint. Such injuries are always serious, their recovery slow and tedious, and the treatment so varied and difficult that the services of a veterinarian will be necessary.

PUNCTURED WOUNDS OF JOINTS, OR OPEN JOINTS.

These wounds are more or less frequent. They are always serious, and often result in anchylosis (stiffening) of the joint or death of the animal. The joints mostly punctured are the hock, fetlock, or knee, though other joints may, of course, suffer this injury. As the symptoms and treatment are much the same for all, only the accident as it occurs in the hock joint will be described. Probably the most common mode of injury is from the stab of a fork, but it may result from the kick of another horse that is newly shod, or in many other ways. At first the horse evinces but slight pain or lameness. The owner discovers a small wound scarcely larger than a pea, and pays but little attention to it. In a few days, however, the pain and lameness become excessive; the horse can no longer bear any weight upon the injured leg; the joint is very much swollen and painful upon pressure; there are well-marked symptoms of constitutional disturbance—quick pulse, hurried breathing, high temperature, 103° to 106° F., the appetite is lost, thirst is present, the horse reeks with sweat, and shows by an anxious countenance the pain he suffers. He may lie down, though mostly he persists in standing, and the opposite limb becomes swollen from bearing the entire weight and strain for so long a time. The wound which at first appeared so insignificant, is now constantly discharging a thin whitish or yellowish fluid—joint oil or water, which becomes coagulated about the mouth of the wound and adheres to the part in clots like jelly, or resembling somewhat the white of an egg. Not infrequenly the joint opens at different places, discharging at first a thin bloody fluid that soon assumes the character above described.

Treatment of these wounds is most difficult and unsatisfactory. We can do much to prevent this array of symptoms if the case is seen early—within the first twenty-four or forty-eight hours after the injury; but when inflammation of the joint is once fairly established the case becomes one of grave tendencies. Whenever a punctured wound of a joint is noticed, even though apparently of but small moment, we should, without the least delay, apply a strong cantharides blister over the entire joint, being even careful to fill the orifice of the wound with the blistering ointment. This treatment is almost always effectual. It operates to perform a cure in two ways—first, the swelling of the skin and tissues underneath it completely closes round and prevents the ingress of air; second, by the superficial inflammation established it acts to check and abate all deep-seated inflammation. In the great majority of instances, if pursued soon after the accident, this treatment performs a cure in about one week, but should the changes described as occurring later in the joint have already taken place, we must then treat by cooling lotions and the application to the wound of chloride of zinc, 10 grains to the ounce of water, or a paste made up of flour and alum. A bandage is to hold these applications in place, which is only to be removed when swelling of the leg or increasing febrile symptoms demand it. In the treatment of open joints our chief aim must be to close the orifice as soon as possible. For this reason repeated probing or even injections are contraindicted. The only probing of an open joint that is to be sanctioned is on our first visit, when we should carefully examine the wound for foreign bodies or dirt, and after removing them the probe must not again be used. The medicines used to coagulate the synovial discharge are best simply applied to the surface of the wound, on pledgets of tow, and held in place by bandages. Internal treatment is also indicated in those cases of open joints where the suffering is great. At first we should administer a light physic and follow this up with sedatives and anodynes, as directed for contused wounds. Later, however, we should give quinine, or salicylic acid in 1 dram doses two or three times a day.

WOUNDS OF THE TENDON SHEATHS.

Wounds of tendon sheaths are similar to open joints in that there is an ascape of synovial fluid, "sinew water." Where the tendons are simply punctured by a thorn, nail, or fork, we must, after a thorough exploration of the wound for any remaining foreign substance, treat with the flour-and-alum paste, bandages, etc., as for open joint. Should the skin and tendons be divided the case is even more serious and often incurable. There is always a large bed of granulations (proud flesh) at the seat of injury, and a thickening more or less pronounced remains. When the back tendons of the leg are severed we should apply at once a high-heel shoe (which is to be gradually lowered as healing advances) and bandage firmly with a compress moistened with a 10-grain chloride of zinc solution. When proud flesh appears this is best kept under control by repeated applications of a red hot iron. Mares that are valuable as brood animals and stock horses should always be treated for this injury, as, even though blemished, their value is not seriously impaired. The length of time required and the expense of treatment will cause us to hesitate in attempting a cure, if the subject is old and comparatively valueless.

GUNSHOT WOUNDS.

These wounds vary in size and character, depending on the size and quality of the projectile and also the tissue injured. They are so seldom met with in our animals that an extended reference to them seems unnecessary. If a wound has been made by a bullet a careful examination should be made to ascertain if the ball has passed through or out of the body. If it has not we must then probe for the ball, and if it can be located it is to be cut out when practicable to do so. Oftentimes a ball may be so lodged that it can not be removed, and then it may become encysted and remain for years without giving rise to any inconvenience. It is often difficult to locate a bullet, as it is very readily deflected by resistances met with after entering the body.

The entering wound is the size of the projectile, the edges are inverted and often scorched. The wound produced in case of the bullet's exit is larger than the projectile, the edges are turned out and ragged. A bullet heated by the friction of the barrel or air often softens and becomes flattened on striking a bone or other tissue. Modern bullets that have an outer steel layer may pass through bone without splintering it. Leaden bullets may split, producing two exit wounds. Spent bullets may only produce a bruise. Should bones be struck by a ball they are sometimes shattered and splintered to such an extent as to warrant us in having the animal destroyed. A gunshot wound, when irreparable injury has not been done, is to be treated the same as punctured wounds, i. e., stop the hemorrhage, remove the foreign body if possible, and apply hot fomentations or poultices to the wound until suppuration is fairly etsablished. Antiseptic and disinfectant injections may then be used. Should pus accumulate in the tissues, openings must be made at the most depending parts for its escape. Wounds from shotguns fired close to the animals are serious. They are virtually lacerated and contused wounds. Remove all the shot possible from the wound, and treat as directed for contusions. When small shot strike the horse from a distance they stick in the skin or only go through it. The shot grains must be picked out, but as a rule this "peppering" of the skin amounts to but little.

POISONED WOUNDS.

These injuries are the result of bites of snakes, rabid dogs ,stings of bees, wasps, etc. A single sting is not dangerous, but an animal attacked by a swarm of insects may become serious, the chief danger coming from the swelling produced. If stung about the head, the nostrils may be closed as a result of the swelling, causing labored breathing and possibly asphyxiation. Intoxication may be produced by the absorption of this poison and is manifested by staggering gait, spreading of the legs, paralysis of the muscles, difficult respiration, and rise of temperature. Death may follow in five to ten hours.

Treatment.—Douse animal with cold water and apply any alkaline liquid, such as soapsuds, bicarbonate of soda, or weak solution of ammonia. Internally give alcohol, ether, or camphor to strengthen the heart. In case of bites by rattlesnakes, moccasin, or other poisonous snakes, a painful swelling occurs about the bitten part, which is followed by labored breathing, weakness, retching, fever, and death from collapse. The animal usually recovers if it can be kept alive over the third day. In treating the animal, a tight ligature should be passed about the part above the wound to keep the poison from entering the general circulation. Wash out the wound thoroughly with antiseptics and then apply a caustic, such as silver nitrate, or burn with a hot instrument. A subcutaneous injection of one-fourth dram of 1 per cent solution of chromic acid above the wound is also beneficial. Cold water may be applied to the wound to combat the inflammation. Bites of rabid dogs produce an infected wound, and the virus of rabies introduced in this manner should be removed or destroyed in the wound. Therefore produce considerable bleeding by incising the wound, wash out thoroughly with 10 per cent solution of zinc chloride and then apply caustics or the actual cautery.

NAVICULAR DISEASE.

Navicular disease is an inflammation of the sesamoid sheath, induced by repeated bruising or laceration ,and complicated in many cases by inflammation and caries of the navicular bone. In some instances the disease undoubtedly begins in the bone, and the sesamoid sheath becomes involved subsequently by an extension of the inflammatory process.

The thoroughbred horse is more commonly affected than any other, yet no class or breed of horses is entirely exempt. The mule, however, seems rarely, if ever, to suffer from it. For reasons which will appear when considering the causes of the disease, the hind feet are not liable to be affectd. Usually but one fore foot suffers from the disease, but if both should be attacked the trouble has become chronic in the first before the second shows signs of the disease.

Causes.—To comprehend fully now navicuar disease may be caused by conditions and usages common to nearly all animals, it is necessary to recall the peculiar anatomy of the parts involved in the process and the functions which they perform in locomotion.

It must be remembered that the fore legs largely support the weight of the body when the animal is at rest, and that the faster he moves the greater is the shock which the fore feet must receive as the body is thrown forward by the propelling force of the hind legs. This shock could not be withstood by the tissues of the fore feet and legs were it not that it is largely dissipated by the elastic muscles which bind the shoulder to the body, the ease with which the arm closes on the shoulder blade, and the spring of the fetlock joint. But even these means are not sufficient within themselves to protect the foot from injury; so nature has further supplemented them by placing the coffin joint on the hind part of the coffin bone instead of directly on top of it, whereby a large part of the shock of locomotion is dispersed before it can reach the vertical column represented by the cannon, knee, and arm bones. A still further provision is made by placing a soft, elastic pad—the frog and plantar cushion—at the heels to receive the sesamoid expansion of the flexor tendon as it forced downward by the pressure of the coronet bone against the navicular. Extraordinary as these means may appear for the destruction of shock, and ample as they are when the animal is at a slow pace or unweighted by rider or load, they fail to relieve completely the parts from concussion and excessive pressure whenever the opposite conditions are present. The result, then, is that the coronet bone forces the navicular hard against the flexor tendon, which, in turn, presses firmly against the navicular as the force of the contracting muscles lifts the tendon into place. It is self-evident, then, that the more rapid the pace and the greater the load, the greater must these contending forces be, and the greater the liability to injury. For the same reason horses with excessive knee action are more likely to suffer from this disease than others, concussion of the foot and intense pressure on the tendon being common among such horses.

Besides the above exciting causes must be considered those which predispose to the disease. Most prominent among these is heredity. It may be claimed, however, that an inherited predisposition to navicular disease consists not so much in a special susceptibility of the tissues which are involved in the process as in a vice of conformation which, as is well known, is likely to be transmitted from parent to offspring. The faults of conformation most likely to be followed by the development of navicular disease are an insufficient planter cushion, a small frog, high heels, excessive knee action, and contracted heels. Finally, the environments of domestication and use, such as dry stables, heavy pulling, bad shoeing, punctured wounds, etc., all have their influence in developing this disease.

Symptoms.—In the early stages of navicular disease the symptoms are generally very obscure. When the disease begins in inflammation of the navicular bone, the animal while at rest points the affected foot a time before any lameness is seen. While at work he apparently travels as well as ever, but when placed in the stable one foot is set out in front of the other, resting on the toe, with fetlock and knee flexed. After a time, if the case is closely watched, the animal takes a few lame steps while at work, but the lameness disappears as suddenly as it came, and the driver doubts if the animal was really lame at all. Later on the patient has a lame spell which may last during a greater part of the day, but the next morning it is gone; he leaves the stable all right, but goes lame again during the day. In time he has a severe attack of lameness, which may last for a week or more, when a remission takes place and it may be weeks or months before another attack supervenes. Finally, he becomes constantly lame, and the more he is used the greater the lameness.

In the lameness from navicular disease the affected leg always takes a short step, and the toe of the foot first strikes the ground; so the shoe is most worn at this point. If the patient is made to move backward, the foot is set down with exceeding great care, and the weight rests upon the affected leg but a moment. When exercised he often stumbles, and if the road is rough he may fall on his knees. If he is lame in both feet the gait is stilty, the shoulders seem stiff, and, if made to work, sweats profusely from intense pain. Early in the development of the disease a careful examination will reveal some increased heat in the heels and frog, particularly after work; as the disease progresses this becomes more marked, until the whole foot is hot to the touch. At the same time there is an increased sensibility of the foot, for the patient flinches from the percussion of a hammer lightly applied to the frog and heels or from the pressure of the smith's pincres. The frog is generally shrunken, often of a pale-red color, and at times is affected with thrush. If the heels are pared away so that all the weight is received on the frog, or if the same result is attained by the application of a bar shoe, the animal is excessively lame. The muscles of the leg and shoulder shrink away, and often tremble as the animal stands at rest. After months of lameness the foot is found to be shrunken in its diameter and apparently lengthened; the horn is dry and brittle and has lost its natural gloss while circular ridges, developed most toward the heels, cover the upper part of the hoof. When both feet are affected, the animal points first one hoof, then the other, and stands with the hind feet well forward beneath the body, so as to relieve the fore feet as much as possible from bearing weight. In old cases the wasting of the muscles and the knuckling at the fetlock become so great that the leg cannot be strightened; and locomotion can scarcely be performed. The disease generally makes a steady progress without inclining to recovery—the remission of symptoms in the earlier stages should not be interpreted as evidence that the process has terminated. The complications usually seen are ringbones, sidebones, thrush, contracted heels, quarter-cracks, and fractures of the navicular, coronet, and pastern bones.

SIDEBONES.

A sidebone consists in a transformation of the lateral cartilages found on the wings of the coffin bone into bony matter by the deposition of lime salts. The disease is a common one, especially in heavy horses used for draft, in cavalry horses, cow ponies, and other saddle horses, and runners and trotters.

Sidebones are peculiar to the forefeet, yet they occasionally develop in the hind feet, where they are of little importance since they cause no lameness. In many instances sidebones are of slow growth and, being unaccompanied by acute inflammation, they cause no lameness until such time, as by reason of their size, they interfere with the action of the joint.

Causes.—Sidebones often grow in heavy horses without any apparent injury, and their development has been attributed to the over-expansion of the cartilages caused by the great weight of the animal. Blows and other injuries to the cartilages may set up an inflammatory process which ends in the formation of these bony growths. Highheeled shoes, high calks, and long feet are always classed among the conditions which may excite the growth of sidebones. They are often seen in connection with contracted heels, ringbones, navicular disease, punctured wounds of the foot, quarter-cracks, and occasionally as a sequel to founder.

Symptoms.—In the earlier stages of the disease, if inflammation is present, the only evidence of the trouble to be detected is a little fever over the seat of the affected cartilage and a slight lameness. In the lameness of sidebones the toe of the foot first strikes the ground and the step is shorter than natural. The subject comes out of the stable stiff and sore, but the gait is more free after exercise.

Since the deposit of bony matter begins in that part of the cartilage where it is attached to the coffin bone, the diseased process may exist for some time before the bony growth can be seen or felt. Later on, however, the cartilage can be felt to have lost its elastic character, and by standing in front of the animal a prominence of the coronary region at the quarters can be seen. Occasionally these bones become so large as to bulge the hoof outward, and by pressing on the joint they so interfere with locomotion that the animal becomes entirely useless.

Treatment.—So soon as the disease can be diagnosed active treatment should be adopted. Cold water bandages are to be used for a few days to relieve the fever and soreness.

The improvement consequent on the use of these simple measures often leads to the belief that the disease has recovered; but with a return to work the lameness, fever, etc., reappears. For this reason the use of blisters, or better still, the firing iron, should follow on the discontinuance of the cold bandages.

But in many instances no treatment will arrest the growth of these bony tumors, and as a paliative measure neurotomy must be resorted to. Generally this operation will so relieve the pain of locomotion that the patient may be used for slow work; but in animals used for fast driving or for saddle purposes, the operation is practically useless. Some years ago I unnerved a number of cavalry horses at Fort Leavenworth that were suffering from sidebones, and the records show that in less than seven months all were more lame than ever. Since a predisposition to develop sidebones may be inherited, animals suffering from this disease should not be used for breeding purposes, unless the trouble is known to have originated from an accident.

SPLINTS.

We first turn our attention to the splint, as certain bony elargements which are developed on the cannon bone, between the knee or the hock and the fetlock jont, are called. They are found on the inside of the leg, from the knee, near to which they are frequently found, downward to about the lower third of the principal cannon bone. They are of various dimensions, and are readily perceptible both to the eye and to the touch. They vary considerably in size, ranging from that of a large nut downward to very small proportions. In searching for them they may be readily detected by the hand if they have attained sufficient development in their usual situation, but must be distinguished from a small bony enlargement which may be felt at the lower third of the cannon bone, which is neither a splint nor a pathological formation of any kind, but merely the buttonlike enlargement at the lower extremity of the small metacarpal or splint bone.

We have said that splints are to be found on the inside of the leg. This is true as a general statement, but it is not invariably so, and they occasionally appear on the outside. It is also true that they appear most commonly on the fore legs, but this is not exclusively the case, and they may at times be found on both the inside and outside of the hind leg. Usually a splint forms only a true exostosis, or a single bony growth, with a somewhat diffuse base, but neither is this invariably the case. In some instances they assume more important dimensions, and pass from the inside to the outside of the bone, on its posterior face, between that and the suspencory ligament. This form is termed the pegged splint, and constitutes a serious and permanent deformity, in consequence of its interference with the play of the fibrous cord which passes behind it, becoming this a source of continual irritation and consequently permanent lameness.

Symptoms.—A splint may thus frejuently become a cause of lameness though not necessarily in every instance; but it is a lameness possessing features peculiar to itself. It is not always continuous but at times assumes an intermittent character, and is more marked when the animal is warm than when he is cool. If the lameness is near the kneejoint, it is very apt to become aggravated when the animal is put to work, and the gait acquires then a peculiar character, arising from the manner in which the limb is carried outward from the knees downward, which is done by a kind of abduction of the lower part of the leg. Other symptoms, however, than the lameness and the presence of the splint, which is its cause, may be looked for in the same connection as those which have been mentioned as pertaining to certain evidences of periostitis, in the increase of the temperature of the part, with swelling and probably pain on pressure. This last symptom is of no little importance since its presence or absence has in many cases formed the determining point in deciding a question of difficult diagnosis.

Cause.—A splint being one of the results of periostitis, and the latter one of the effects of external hurts, it naturally follows that the parts which are most exposed to blows and collisions will be those on which the splint will most commonly be found, and it may not be improper, therefore, to refer to hurts from without as among the common causes of the lesion. But other causes may also be productive of the evil, and among these may be mentioned the overstraining of an immature organism by the imposition of excessive labor upon a young animal at a too early period of his life. The bones which enter into the formation of the cannon are three in number, one large and two smaller, which during the youth of the animal, are more or less articulated, with a limited amount of mobility, but which become in maturity firmly joined by a rigid union and ossification of their interarticular surface. If the immature animal is compelled, then to perform exacting tasks beyond his strength, the inevitable result will follow in the muscular straining, and perhaps tearing asunder of the fibers which unite the bones at their points of juncture, and it is difficult to understand how inflammation or periostitis can fail to develop as the natural consequence of such local irritation. If the result were deliberately and intelligently designed, it could hardly be more effectually accomplished.

The splint is an object of the commonest occurrences—so common, indeed, that in large cities a horse which can not exhibit one or more specimens upon some portion of his extremities is one of the rarest of spectacles. Though it is in some instances a cause of lameness, and its discovery and cure are sometimes beyond the ability of the shrewdest and most experienced veterinarians, yet as a source of vital danger to the general equine organization, or even functional disturbance, or of practical inconvenience, aside from the rare exceptional cases which exist as mere samples of possibility, it can not be considered to belong to the category of serious lesions. The worst stigma that attaches to it is that in general estimation it is ranked among eyesores and continues indefinitely to be that and nothing different. The inflammation in which they originated, acute at first, either subsides or assumes the chronic form, and the bony growth becomes a permanence—more or less established, it is true but doing no positive harm and not hindering the animal from continuing his daily routine of labor. All this, however, requires a proviso against the occurrence of a subsequent acute attack, when, as with other exostoses, a fresh access of acute symptoms may be followed by a new patholigical activity, which shall again develop, as a natural result, a reappearnce of the lameness.

Treatment.—It is, of course, the consideration of the comparative harmlessness of splints that suggests and justifies the policy of non-interference, except as they become a positive cause of lameness. And a more positive argument for such non-interference consists in the fact that any active and irritating treatment may so excite the parts as to bring about a renewed pathological activity, which may result in a reduplication of the phenomena, with a second edition, if not a second and enlarged volume, of the whole story. For our part, our faith is firm in the impolicy of interference, and this faith is founded on an experience of many years, during which our practice has been that of abstention.

Of course, there will be exceptional conditions which will at times indicate a different course. These will become evident when the occasions present themselves, and extraordinary forms and effects of inflammation and growth in the tumors offer special indications. But our conviction remains unshaken that surgical treatment of the operative kind is usually useless, if not dangerous. We have little faith in the method of extirpation except under very special conditions, among which that of diminutive size has been named, which seems in itself to constitute a sufficient negative argument. But even in such case a resort to the knife or the gouge could scarcely find a justification, since no operative procedure is ever without a degree of hazard, to say nothing of the considerations which are always forcibly negative in any question of the infliction of pain and the unnecessary use of the knife.

If an acute periostitis of the cannon bone has been readily discovered, the treatment we have already suggested for that ailment is at once indicated, and the astringent lotions may be relied upon to bring about beneficial results. Sometimes, however, preference may be given to a lotion possessing a somewhat different quality, the alternative consisting of tincture of iodine applied to the inflamed spot several times daily.

If the lameness persists under this mild course of treatment, it must, of course, be attacked by other methods, and we must resort to the cantharides ointment or Spanish-fly blister, as we have before recommended. Besides this, and producing an analogous effect, the compounds of biniodide of mercury are favored by some. It is prepeared in the form of an ointment, consisting of 1 dram of the biniodide to 1 ounce of either lard or vaseline. It forms an excellent blistering and alternative application, and is of special advantage in newly formed or recently discovered exostosis.

It remains a pertinent query, however, and one which seems to be easily answered, whether a tumor so diminutive in size that it can only be detected by diligent search, and which is neither a disfigurement nor an obstruction to the motion of the limb, need receive any recognition whatever. Other modes of treatment for splints are recommended and practiced which belong strictly to the domain of operative veterianry surgery. Among these are to be reckoned actual cauterization, or the application of the fire iron and the operation of periosteotomy. These are frequently indicated in the treatment of splints which have resisted milder means.

The mode of the development of their growth; their intimacy, greater or less, with both the large and the small cannon bones; the possibility of their extending to the back of these bones under the suspensory ligament; the dangerous complications which may follow the rough handling of the parts, with also a possibility, and indeed as probability, of their return after removal—these are the considerations which have influenced our judgment in discarding from our practice and our approval the method of removal by the saw or the chisel, as recommended by certain European veterinarians.

RINGBONES.

This term forms the designation of the exostosis which is found on the coronet and in the digital and phalangeal regions. The name is appropriate, because the growth extends quite around the coronet, which it encircles in the manner of a ring, or perhaps because it often forms upon the back of that bone a regular osseous arch, through which the back tendons obtain a passage. The places where these growths are usually developed have caused their subdivision and classification into three varieties, with the designations of high, middle, and low, though much can not be said as to the importance of such distinction. It is true that the ringbone or phalangeal exostosis may be found at various points on the foot, in one case forming a large bunch on the upper part and quite close to the fetlock joint; in another around the upper border of the hoof, or perhaps on the extreme front or on the very back of the coronet. The shape in which they commonly appear is favorable to their easy discovery their form when near the fetlock usually varying too much from the natural outlines of the part when compared with those of the opposite side to admit of error in the matter.

A ringbone when on the front of the foot, even when not very largely developed, assumes the form of a diffused convex swelling. If situated on the lower part, it will form a thick ring, encircling that portion of the foot immediately above the hoof; when found on the posterior part, a small, sharp osseous growth somewhat projecting, sometimes on the inside and sometimes on the outside of the coronet, may comprise the entire manifestation.

Cause.—As with splints, ringbones may result from severe labor in early life, before the process of ossification has been fully perfected; or they may be referred to bruises, blows, sprains, or other violence; or injuries of tendons, ligaments, or joints may be among the accountable causes.

It is certain that they may commonly be traced to diseases and traumatic lesions of the foot, and their appearance may be reasonably anticipated among the sequelæ of an abscess of the coronet; or the cause may be a severe contusion resulting from calking, or a deep-punctured wound from picking up a nail or stepping upon any hard object of sufficiently irregular form to penetrate the sole.

Moreover, a ringbone may originate in heredity. This is a fact of no little importance in its relation to questions connected with the extensive interests of the stock breeder and purchaser.

That the hereditary transmission of constitutional idiosyncrasies is an active cause with regard to diseases in general, it would be absurd to claim, but we do claim that a predisposition to contract ringbone due to faulty conformation, such as long, thin pasterns with narrow joints and steep fetlocks, may be inherited in many cases, and in a smaller proportion of cases this predisposition may act as a secondary cause in the formation of ringbone.

The importance of this point when considered in reference to the policy which should be observed in the selection of breeding stock is obvious, and, as the whole matter is within the control of the owners, and breeders, it will be their own fault if the unchecked transmission of ringbones from one equine generation to another shall be allowed to continue. It is our belief that among the diseases which are known for their tendency to perpetuate and repeat themselves by individual succession, those of the bony structures stand first, and the inference from such a fact which would exclude every animal of doubtful soundness in its osseous apparatus from the stud list and the brood farm is too plain for argument.

Symptoms.—Periostitis of the phalanges is an ailment requiring careful exploration and minute inspection for its discovery, and is quite likely to result in a ringbone of which lameness is the result. The mode of its manifestation varies according to the state of development of the diseased growth as affected by the circumstances of its location and dimensions. It is commonly of the kind which, in consequence of its intermittent character, is termed lameness when cool, having the peculiarity of exhibiting itself when the animal starts from the stable and of diminishing, if not entirely disappearing, after some distance of travel, to return to its original degree, if not indeed a severer one, when he has again cooled off in his stable. The size of the ringbone does not indicate the degree to which it cripples the patient, but the position may, especially when it interferes with the free movement of the tendons which pass behind and in front of the foot. While a large ringbone will often interfere but little with the motion of the limb, a smaller growth, if situated under the tendon, may become the cause of considerable and continued pain.

A ringbone is doubtless a worse evil than a splint. Its growth, its location, its tendency to increased development, its exposure to the influence of causes of renewed danger, all tend to impart an unfavorable cast to the prognosis of a case and to emphasize the importance and the value of an early discovery of its presence and possible growth. Even when the discovery has been made, it is often the case that the truth has come to light too late for effectual treatment. Months may have elapsed after the first manifestation of the lameness before a discovery has been made of the lesion from which it has originated, and there is no recall for the lapsed time. And by the uncompromising seriousness of the discouraging prognosis must the energy and severity of the treatment and the promptness of its administration be measured. The periostitis has been overlooked; any chance that might have existed for preventing its advance to the chronic stage has been lost; the osseous formation is established; the ringbone is a fixed fact, and the indications are urgent and pressing.

Treatment.—The preventive treatment consists in keeping colts well nourished and in trimming the hoof and shoeing to properly balance the foot, and thus prevent an abnormal strain on the ligaments. Even after the ringbone has developed, a cure may sometimes be occasioned by proper shoeing directed toward straightening the axis of the foot as viewed from the side by making the wall of the hoof from the coronet to the toe continuous with the line formed by the front of the pastern. As long as inflammation of the periosteum and ligaments remains, a sharp blister of biniodide of mercury and cantharides may do good if the animal is allowed to rest for four or five weeks. If this fails some success may be accomplished by point firing in two or three lines over the ringbone. It is necessary to touch the hot iron well into the bone, as superficial firing does little good. When all these measures have failed to remove the lameness, or when the animal is not worth a long and uncertain treatment, a competent veterinarian should be engaged to perform double neurectomy, high or low, of the planter nerves, or neurectomy of the median nerve as indicated by the seat of the lesion.

SPAVIN.

This affection, popularly termed bone spavin, is an exostosis of the hock joint. The general impression is that in a spavined hock the bony growth should be seated on the anterior and internal part of the joint, and this is partially correct, as such a growth will constitute a spavin in the most correct sense of the term. But an enlargement may appear on the upper part of the hock also, or possibly a little below the inner side of the lower extremity of the shank bone, forming what is known as a high spavin; or, again, the growth may form just on the outside of the hock and become an outside, or external, spavin. And, finally, the entire under surface may become the seat of the osseous deposit, and involve the articular face of all the bones of the hock, and this again is a bone spavin. There would seem, then, to be but little difficulty in comprehending the nature of a bone spavin, and there would be none but for the fact that there are similar affections which might confuse one if the diagnosis is not very carefully made.

But the hock may be "spavined," while to all outward observation it still retains its perfect form. With no enlargement perceptible to sight or touch the animal may yet be disabled by an occult spavin, an anchylosis in fact, which has resulted from a union of several of the bones of the joint, and it is only those who are able to realize the importance of its action to the perfect fulfillment of the function of locomotion by the hind leg who can comprehend the gravity of the only prognosis which can be justified by the facts of the case—a prognosis which is essentially a sentence of serious import in respect to the future usefulness and value of the animal. For no disease, if we except those acute inflammatory attacks upon vital organs to which the patient succumbs at once, is more destructive to the usefulness and value of a horse than a confirmed spavin. Serious in its inception, serious in its progress, it is an ailment which when once established, becomes a fixed condition which there is no known means of dislodging.

Cause.—The periostitis, of which it is nearly always a termination is usually the effect of a traumatic cause operating upon the complicated structure of the hock, such as a sprain which has torn a ligamentous insertion and lacerated some of its fibers; or a violent effort in jumping, galloping, or trotting, to which the victim has been compelled by the torture of whip and spur while in use as a gambling implement by a sporting owner, under the pretext of "improving his breed"; or the extra exertion of starting an inordinately heavy load; or an effort to recover his balance from a misstep; or slipping upon an icy surface, or sliding with worn shoes upon a bad pavement, and other kindred causes. And we can repeat here what we have before said concerning bones, in respect to heredity as a cause. From our own experience we know of equine families in which this condition has been transmitted from generation to generation, and animals otherwise of excellent conformation rendered valueless by the misfortune of a congenital spavin.

Symptoms.—The evil is one of the most serious character for other reasons, among which may be specified the slowness of its development and the insidiousness of its growth. Certain indefinite phenomena and alarming changes and incidents furnish usually the only portents of approaching trouble. Among these signs may be mentioned a peculiar posture assumed by the patient while at rest, and becoming at length so habitual that it can not fail to suggest the action of some hidden disorder. The posture is due to the action of the adductor muscles, the lower part of the leg being carried inward, and the heel of the shoe resting on the toe of the opposite foot. Then an unwillingness may be noticed in the animal to move from one side of the stall to the other. When driven he will travel, but stifly, and with a sort of sidelong gait between the shafts, and after finishing his task and resting again in his stall will pose with the toe pointing forward, the heel raised, and the hock flexed. Some little heat and a considerable amount of inflammation soon appear. The slight lameness which appears when backing out of the stall ceases to be noticeable after a short distance of travel.

A minute examination of the hock may then reveal the existence of a bony enlargement which may be detected just at the junction of the hock and the cannon bone, on the inside and a little in front, and tangible both to sight and touch. This enlargement, or bone spavin, grows rapidly and persistently and soon acquires dimensions which render it impossible to doubt any longer its existence or its nature. Once established, its development continues under conditions of progress similar to those to which we have before alluded in speaking of other like affections. The argument advanced by some that because these bony deposits are frequently found on both hocks they are not confined to a single point.

The characteristic lameness of bone spavin, as it affects the motion of the hock joint, presents two aspects. In one class of cases it is most pronounced when the horse is cool, in the other when he is at work. The first is characterized by the fact that when the animal travels the toe first touches the ground, and the heel decends more slowly, the motion of flexion, at the hock taking place stiffly, and accompanied by a dropping of the hip on the opposite side. In the other case the peculiarity is that the lameness increases as the horse travels; that when he stops he seeks to faver the lame leg, and when he resumes his work soon after he steps much on his toe, as in the first variety.

As with sidebones, though for a somewhat different reason, the dimensions of the spavin and the degree of the lameness do not seem to bear any determinate relation, the most pronounced symptoms at times accompanying a very diminutive growth. But the distinction between the two varieties of cool and warm may easily be determined by remembering the fact that in a majority of cases the first, or cool, is due to a simple exostosis, while the second is generally connected with disease of the articulation, such as ulceration of the articular surface—a condition which, as we proceed further, will meet our attention when we reach the subject of stringhalt.

An excellent test for spavin lameness, which may be readily applied consists in lifting the affected leg off the ground for one or two minutes and holding the foot high so as to flex all the joints. An assistnat, with the halter strap in his hand, quickly starts the animal off in a trot, when, if the hock joint is affected, the lameness will be so greatly intensified as to readily lead to a diagnosis.

Prognosis.—Having thus fully considered the history of bone spavin we are prepared to give due weight to the reasons which exist for the adverse prognosis which we must usually feel compelled to pronounce when encountering it in practice, as well as to realize the importance of early discovery. It is but seldom, however, that the necessary advantage of this early knowledge can be secured, and when the true nature of the trouble has become apparent it is usually too late to resort to the remedial measures which, if duly forewarned, a skillful practitioner might have employed. We are fully persuaded that but for the loss of the time wasted in the treatment of purely imaginary ailments very many cases of bone spavin might be arrested in their incipiency and their victims preserved for years of comfort for themselves and valuable labor to their owners.

Treatment.—To consider a hypothetical case: An early discovery of lameness has been made; that is, the existence of an acute inflammation—of periostitis—has been detected. The increased temperature of the parts has been observed, with the stiffened gait and the characteristic pose of the limb, and the question is proposed for solution. What is to be done? Even with only these comparatively doubtful symptoms— doubtful with the nonexpert—we should direct our treatment to the hock in preference to any other joint, since of all the joints of the hind leg it is this which is most liable to be attacked, a natural result from its peculiarities of structure and function. And in answer to the query, What is the first treatment indicated? We should rest—emphatically, and as an essential condition, rest. Whether only threatened, suspected, or positively diseased, the animal must be wholly released from labor, and it must be no partial or temporary quiet of a few days. In all stages and conditions of the disease, whether accompanied by the complication of arthritis, there must be a total suspension of effort until the danger is over. Less than a month's quiet ought not to be thought of—the longer the better.

Good results may also be expected from local applications. The various lotions which cool the parts, the astringents which lower the tension of the blood vessels, the tepid fomentations which accelerate the circulation in the engorged capillaries, the liniments of various compositions, the stimulants, the opiate anodynes, the sedative preparations of aconite, the alternative friction of iodine—all these are recommended and prescribed by one or another. We prefer counter-irritants, for the simple reason, among many other, that they tend by the promptness of their action to prevent the formation of the bony deposits. The lameness will often yield to the blistering action of cantharides, in the form of ointment or liniment, and to the alterative preparations of iodyne or mercury. And if the owner of a "spavined" horse really succeeds in removing the lameness, he has accomplished all that he is justified in hoping for; beyond this let him be well persuaded that a "cure" is impossible.

For this reason, moreover, he will do well to be on his guard against the patented "cures" which the traveling horse doctor may urge upon him, and withhold his faith from the circular of the agent who will deluge him with references and certificates. It is possible that nostrums may in some exceptional instances prove serviceable, but the greater number of them are capable of producing only injurious effects. The removal of the bony tumor can not be accomplished by any such means, and if a trial of these unknown compounds should be followed by complications no worse than the establishment of one or more ugly hairless cicatrices, it will be well for both the horse and his owner.

Rest and counter-irritation, with the proper medicaments, constitute then, the prominent points in the treatment designed for the relief of bone spavin. Yet there are cases in which all the agencies and methods referred to seem to lack effectiveness and fail to produce satisfactory results. Either the rest has been prematurely interrupted or the blisters have failed to rightly modify the serious infiltration, or the case in hand has some undiscernible characteristics which seem to have rendered the diease neutral to the agencies employed against it. An indication of more energetic means is then presented, and free cauterization with the firing iron becomes necessary.

At this point a word of explanation in reference to this operation of firing may be appropriate for the satisfaction of any among our readers who may entertain an exaggeraed idea of its severity and possible cruelty.

The operation is one of simplicity, but is nevertheless one which, in order to secure its benefits, must be reserved for times and occasions of which only the best knowledge and highest discretion should be allowed to judge. It is not the mere application of a hot iron to a given part of the body which constitutes the operation of firing. It is the methodical and scientific introduction of heat into the structure with a view to a given effect upon a diseased organ or tissue by an expert surgeon. The first is one of the degrees of mere burning. The other is scientific cauterization, and is a surgical manipulation which should be committed exclusively to the practiced hand of the veterinary surgeon.

Either firing alone or stimulation with blisters is of great efficacy for the relief of lameness from bone spavin. Failure to produce relief after a few applications and after allowing a sufficient interval of rest should be followed by a second, or, if needed, a third firing.

In case of further failure there is a reserve of certain special operations which have been tried and recommended, among which those of cunean tenotomy, periosteotomy, the division of nervours branches, etc., may be mentioned. These, however, belong to the peculiar domain of the veterinary practitioner, and need not now engage our attention.

CURB.

This lesion is the bulging backward of the posterior part of the hock, where in the normal state there should be a straight line, extending from the upper end of the point of the hock down to the fetlock.

Cause.—The cause may be a sprain of the tendon which passes on the posterior part of the hock, or of one of its sheaths, or of the strong ligament situated on the posterior border of the oscalcis.

Hocks of a certain conformation seem to posses a greater liability to curb than others. They are overbent, coarse, and thick in appearance, or may be too narrow from front to back across the lower portion. This condition may therefore result as a sequence to congenital malformation, as in the case of horses that are saber-legged. It often occurs, also, as the result of violent efforts, of heavy pulling, of high jumping, or of slipping; in a word, it may result from any of the causes heretofore considered as instrumental in producing lacerations of muscular, tendinous, or ligamentous structure.

Symptoms.—A hock affected with curb will, at the outset, present a sweeling more or less diffuse on its posterior portion, with varying degrees of heat and soreness, and these will be accompanied by lameness of a permanent character. At a later period, however, the swelling will become better defined, the deformity more characteristic, the prominent curved line readily detected and the thickness of the infiltrated tissue easily determined by the fingers. At this time, also, there may be a condition of lameness, varying in degree, while at others, again, the irregularity of action at the hock will be so slight as to escape detection, the animal betraying no appearance of its existence.

A curb constitutes, by a strict construction of the term, an "unsoundness," since the hock thus affected is less able to endure severe labor, and is more liable to give way with the slightest effort. And yet the prognosis of a curb can not be considered to be serious, since it generally yields to treatment, or at least the lameness it may occasion is generally easily relieved, though the loss of contour caused by the bulging will always constitute a blemish.

Treatment.—On the first appearance of a curb, when it exhibits the signs of an acute inflammation, the first indication is to subdue this by the use of cold applications as intermittent or constant irrigation or an ice poultice; but when these have exhausted their effect and the swelling has assumed better defined boundaries, and the infiltration of the tendons or of the ligaments is all that remains of a morbid state, then every effort must be directed to the object of effecting its absorption and reducing its dimensions by pressure and other methods. The medicament most to be trusted are blisters of cantharides and frictions with ointments of iodine, or, preferably, biniodide of mercury. Mercurial agents alone, by their therapeutic properties or by means of the artificial bandages which they furnish by their incrustations when their vesicatory effects are exhausted, will give good results in some instances by a single application and often by repeated applications. The use of the firing iron must, however, be frequently resorted to, either to remove the lameness or to stimulate the absorption. We believe that its early application ought to be resorted to in preference to waiting until the exudation is firmly organized. Firing in dull points or in lines will prove as beneficial in curb as in any other disease of a similar nature.

LACERATED TENDONS.

This form of injury, whether of a simple or of a compound character, may become a lesion of a very serious nature, and will usually require long and careful treatment, which may yet prove unavailing in consequence either of the intrinsically fatal character of the wound itself or the complications which have rendered it incurable.

Cause.—Like all similar injuries, these are the result of traumatic violence, such as contact with objects both blunt and sharp; a curbstone in the city; in the country, a tree stump or a fence, especially one of wire. It may easily occur to a runaway horse when he is "whipped" with fragments of harness or "flogged" by fragments of splintered shafts, "thrashing" his legs, or by the contact of his legs with the wagon he has overturned and shattered with his heels while disengaging himself from its wreck.

Symptoms.—It is not always necessary that the skin should be involved in this form of injury. On the contrary, the tegument is frequently left entirely intact, especially when the injury follows infectious diseases or occurs during light exercise after long periods of rest in the stable. Yet, again, the skin may be cut through and the tendons nearly severed. A point a little above the fetlock is usually the seat of the injury. But irrespective of this, and whether the skin is or is not implicated, the symptoms very much resemble those of a fracture. There is excessive mobility, at least more than in a normal state, with more or less inability to carry weight. There may be swelling of the parts, and on passing the hands carefully along the tendon to the point of division the stumps of the divided structure will be felt more or less separated, perhaps wholly divided. The position of the animal while at rest standing is peculiar and characteristic. While the heels are well placed on the ground, the toe is correspondingly elevated, with a tendency to turn up—a form of breaking down which was described when speaking of the fracture of the sesamoids. Carrying weight is done only with considerable difficulty, but with comparatively little pain, and the animal will unconsciously continue to move the leg as if in great suffering, notwithstanding the fact that his general condition may be very good and his appetite unimpaired.

The effect upon the general organism of compound lacerated wounds of tendinous structures, or those which are associated with injuries of the skin, are different. The wound becomes in a short time the seat of a high degree of inflammation with abundant suppuration, filling it from the bottom; and the tendon, whether as the result of the bruise or of the laceration, or of maceration in the accumulated pus, undergoes a process of softening, and necrosis and sloughing ensue. This complicates the case, and probably some form of tendinous synovitis follows, running into suppurative arthritis, to end, if close to a joint, with a fatal result.

Prognosis.—The prognosis of lacerated tendons should be very conservative. Under the most favorable circumstances a period of from six weeks to two months will be necessary for the treatment, before the formation of the cicatricial callus and the establishment of a firm union between the tendinous stumps.

Treatment.—As with fractures, and even in a greater degree, the necessity is imperative, in the treatment of lacerated tendons, to secure as perfect a state of immobility as can be obtained compatibly with the disposition of the patient; the natural opposition of the animal, sometimes ill-tempered and fractious at best, under the necessary restraint, causing at times much embarrassment to the practitioner in applying the necessary treatment. Without the necessary immobility no close connection of the ends of the tendons can be secured. To fulfill this necessary condition the posterior part of the foot and the fetlock must be supported and the traction performed by them relieved, an object which can be obtained by the use of the high-heeled and bar shoe, or possibly better accomplished with a shoe of the same kind extending about 2 or 2½ inches back of the heels. The perfect immobility of the legs is obtained in the same way as in the treatment of fracture, with splints, bandages, iron apparatus, plaster of adhesive mixtures, and similar means. So long as the dressing remain in place undisturbed and no chafing or other evidence of pain is present, the dressing may be continued without changing, the patient being kept in the slings for a period sufficient to insure the perfect union of the tendons. But for a compound lesion, when there is laceration of the skin, some special care is necessary. The wound must be carefully watched and the dressing removed at intervals of a few days, or as often as may be needful, all of which additional manipulation and extra nursing, however indispensable, still adds to the gravity of the case and renders the prognosis more and more serious. When the tendons have sloughed in threads of various dimensions, or if in the absence of this process of mortification healthy granulations should form and fill up the wound, still very careful attention will be required, the granulating ends of the tendons having a tendency to bulge between the edges of the skin and to assume large dimensions, forming bulky excrescences or growths of a warty or cauliflower appearance, the removal of which becomes a troublesome matter.

The union of the tendons will at times leave a thickening of varying degree near the point of cicarization, the absorption of which becomes an object of difficult and doubtful accomplishment, but which may be promoted by moderate blistering and the use of alterative and absorbent mixtures or perhaps the fire iron. A shoe with heels somewhat higher than usual will prove a comfort to the animal and aid in moderating and relieving the tension of the tendons.

DISEASES OF CATTLE.

Revised Edition, 1908.

ABORTION (SLINKING THE CALF).

Technically, abortion is the term used for the expulsion of the offspring before it can live out of the womb. Its expulsion after it is capable of an independent existence is premature parturition. In the cow this may be after seven and one-half months of pregnancy. Earl Spencer failed to raise any calf born before the two hundred and forty-second day. Dairymen use the term abortion for the expulsion of the product of conception at any time before the completion of the full period of a normal pregnancy, and in this sense it will be employed in this article.

Abortion in cows is either contagious or non-contagious. It does not follow that the contagium is the sole cause in every case in which it is present. We know that the organized germs of contagion vary much in potency at different times, and that the animal system also varies in susceptibility to their attack. The germ may therefore be present in a herd without any manifest injury, its disease-producing power having for the time abated considerably, or the whole herd being in a condition of comparative insusceptibility. At other times the same germ may have become so virulent that almost all pregnant cows succumb to its force, or the herd may have been subjected to other causes of abortion which, though of themselves powerless to actually cause abortion, may yet so predispose the animals that even the weaker germ will operate with destructive effect. In dealing with this disease, therefore, it is the part of wisdom not to rest satisfied with the discovery and removal of one specific cause, but rather to exert by correcting all the harmful conditions.

CAUSES OF NON-CONTAGIOUS ABORTION.

As abortion most frequently occurs at those three-week intervals at which the cow would have been in heat if nonpregnant, we may assume a predisposition at such times due to a periodicity in the nervous system and functions. Poor condition, weakness, and a too watery state of the blood is often a predisposing cause. This in its turn may result from poor or insfficient food, from the excessive drain upon the udder while bearing the calf, from the use of food deficient in certain essential elements, like the nitrogenous constituents or albuminoids, from chronic wasting diseases, from roundworms or tapeworms in the bowels, from flate worms (flukes, trematodes) in the liver, from worms in the lungs, from dark, damp, unhealthy buildings, etc. In some such cases the nourishment is so deficient that the fetus dies in the womb and is expelled in consequence. Excessive loss of blood, attended as it usually is by shock, becomes a direct cause of abortion. Acute inflammations of important organs are notorious causes of abortion, and in most contagious fevers (lung plague, rinderpest, foot and mouth disease) it is a common result. Affections of the chest which pervent due æration of the blood induce contractions of the womb, as shown experimentally by Brown-Sequard. Pregnant women suffcated in smoke aborted in many cases (Retoul).

Chronic diseases of the abdominal organs are fertile sources of abortion, especially those that cause bloating (tympany of the first stomach) or diarrhea, or the diseases of the ovaries, kidneys, or bladder. The presence of gravel, or stone, in the kidneys, bladders, or urinary canals is an especial predisposing or even an exciting cause in magnesium limestone districts and in winter. The presence of tubercles in the ovaries, the broad ligaments of the womb, and even on the outer surface of the womb itself, must be added as efficient causes.

Fatty degeneration of the heart, a common disease in old cows of improved beef breeds, lessens the circulation in the placenta (and fetus) and arresting nutrition, may cause abortion.

Indigestions of all kinds are especially dangerous, as they are usually associated with overdistension of the first stomach (paunch) with gas. As this stomach lies directly beneath and to the left side of the womb any disorder, and above all an excessive distention of that organ presses on or affects the womb and its contents dangerously. It further causes contractions of the womb by preventing aeration of the blood. Hence all that tends to indigestion is to be carefully guarded against. Privation of water, which hinders rumination and digestion; ice-cold water, which rouses the womb to contraction and the calf to vigorous movement; green, succulent grass, to which the cow has been accustomed; clover which has just been wet with a slight shower; all green food, roots, potatoes, apples, pumpkins that are frozen or have been, or that are simply covered with hoar frost; food that has been grown in wet seasons or that has been badly harvested; growing corn, oats, etc., if the animal is unused to them; a too dry food or a too stimulating food (wheat bran, pease, maize, and cotton seed) fed too lavishly may, any one of them, induce abortion. The dry and stimulating foods last named bring on constipation with straining and also elevated temperature of the body, which, in itself, endangers the life of the fetus.

Putrid, stagnant water is hurtful both to digestion and the fetus and abortions in cows have been repeatedly traced to this source and have ceased when pure water was supplied. Ergoted grasses have long been known as a cause of widespread abortion in cows. The ergot is familiar as the dark purple or black, hard, spur-like growths which protrude from the seeds of the grasses at the period of their ripening. (Pl. V.) It is especially common in damp localities and cloudy seasons on meadows shaded by trees and protected against the free sweep of the winds. The same is to a large extent true of smut. Hence, wet years have been often remarkable for the great prevalence of abortions. Abortions have greatly increased in New Zealand among cows since the introduction of rye grass, which is specially subject to ergot. As abortion is more prevalent in old dairying districts, the ergot may not be the sole cause in this instance.

The smut of maize, wheat, barley, and oats is fostered by similar conditions and is often equally injurious. It should be added that the ergots and smuts of certain years are far more injurious than those of others. This may be attributed to the fact that they have grown under different conditions, and therefore have developed somewhat different properties, a habit of fungi which has been often observed; or that in certain seasons the cows have been more powerfully predisposed by other operative causes of abortion.

Both ergot and smut vary in potency according to the stage of growth. Doctor Kluge found that the ergot gathered before the grain had fully ripened was much more powerful than that from the fully ripened grain. McGugen found the ergot of wheat more potent than that of rye. It should be added that both ergot and smut are robbed somewhat of their deleterious properties if fed with an abundance of water, so that they may prove harmless if fed with roots, ensilage, etc., whereas they will prove hurtful when fed in the same amount with dry hay. They are also more liable to injure if fed for a long time in succession in winter, though it may be in smaller quantity.

Rust is also charged with causing abortions. That other cryptogams found in musty fodder are productive of abortion has been well established. In Germany and France the wet years of 1851, 1852 and 1853 were notorious for the prevalence of abortions. Fodders harvested in such seasons are always more or less musty, and musty hay and grain have been long recognized as a prolific cause of digesive, urinary, and cerebral disorders. Impactions and bloating of the stomachs, excessive secretion of urine (diuresis), and red-water are common results of such musty fodder, and we have already seen that such disorders of the digestive and urinary organs are very liable to effect the pregnant womb and induce abortion.

The riding of one another by cows is attended by such severe muscular exertion, jars, jolts, mental excitement, and gravitation of the womb and abdominal organs backward that it may easily cause abortion in a predisposed animal.

Keeping in stalls that slope too much behind (over 2 inches) acts in the same way, the compression due to lying and the gravitation backward proving more than a predisposed cow can safely bear.

Deep gutters being in the stalls, into which one or both hind limbs slip unexpectedly, strain the loins and jar the body and womb most injuriously. Slippery stalls in which the flooring boards are laid longitudinally in place of transversely, and on which no cleats or other device is adopted to give a firm foothold, are almost equally dangerous. Driving on icy ground or through a narrow doorway where the abdomen is liable to be jammed are other common causes. Offensive odors undoubtedly cause abortion. To understand this one must take into account the preternaturally acute sense of smell possessed by cattle. By this sense the bull instantly recognizes the pregnant cow and refrains from disturbing her, while man, with all his boasted skill and precise methods, finds it difficult to come to a just conclusion. The emanations from a cow in heat, however, will instantly draw the bull from a long distance. Carrion in the pasture fields or about slaughter houses nearby, the emanations from shallow graves, dead rats or chickens about the barns, and dead calves, the product of prior abortions, are often chargeable with the occurrence of abortions. Aborting cows often fail to expel the afterbirth, and if this remains hanging in a putrid condition it is most injurious to pregnant cows in the near vicinity. So with retained afterbirth in other cows after calving. That some cows kept in filthy stables or near-by slaughter houses may become inured to the odors and escape the evil results is no disproof of the injurious effects so often seen in such cases.

The excitement, jarring, and jolting of a railroad journey will often cause abortion, especially as the cow nears the period of calving, and the terror or injury of railway or other accidents prove incomparably worse.

All irritant poisons cause abortions by the disorder and inflammation of the digestive organs, and if such agents act also on the kidneys or womb, the effect is materially enhanced. Powerful purgatives or diuretics should never be administered to the pregnant cow.

During pregnancy the contact of the expanding womb with the paunch, just beneath it, and its further intimate connection through nervous sympathy with the whole digestive system, leads to various functional disorders, and especially to a morbid craving for unnatural objects of food.

In the cow this is shown in the chewing of bones, pieces of wood, iron bolts, articles of clothing, lumps of hardened paint, etc. An unsatisfied craving of this kind, producing constant excitement of the nervous system, will strongly conduce to abortion. How much more so if the food is lacking in the mineral matter, and especially the phosphates necessary for the building up of the body of both dam and offspring, to say nothing of that drained off in every milking. This state of things is present in many old dairy farms, from which the mineral matters of the surface soil have been sold off in the milk or cheese for generations and no return has been made in food or manure purchased. Here is the craving of an imperative need, and if it is not supplied the health of the cow suffers and the life of the fetus may be sacrificed.

Among other causes of abortion must be named the death or the various illnesses of the fetus, which are about as numerous as those of the adult; the slipping of a young fetus through a loop in the naval string so as to tie a knot which will tighten later and interrupt the flow of blood with fatal effect, and the twisting of the naval string by the turning of the fetus until little or no blood can flow through the contorted cord. There is in addition a series of diseases of the mucous membrane of the womb, and of the fetal membrane (inflammation, effusion of blood, detachment of the membranes from the womb, fatty or other degenerations, etc.), which interfere with the supply of blood to the fetus or change its quality so that death is the natural result, followed by abortion.

CAUSE OF CONTAGIOUS ABORTION.

While any one of the above conditions may occur with the contagious principle in precipitating an epizootic of abortion, yet it is only by reason of the contagium that the disease can be indefinitely perpetuated and transferred from herd to herd. When an aboring cow is placed in a herd that has hitherto been healthy, and shortly afterwards miscarriage becomes prevalent in that herd and continues year after year, in spite of the fact that all the other conditions of life in that herd remain the same as before, it is manifest that the result is due to contagion. When a bull, living in a healthy herd, has been allowed to serve an aborting cow, or a cow from an aborting herd, and when the members of his own herd subsequently served by him abort in considerable numbers, contagion may be safely inferred. Mere living in the same pasture or building does not convey the infection. Cows brought into aborting herd in advanced pregnancy carry their calves to the full time. But cows served by the infected bull, or that have had the infection conveyed by the tongue or tail of other animals, or by their own, or that have had the external genitals brought in contact with wall, fence, rubbing post, litter, or floor previously soiled by the infected animals, will be liable to suffer. The Scottish abortion committee found that when healthy, pregnant cows merely stood with or near aborting cows they escaped, but when a piece of cotton wool lodged for twenty minutes in the vagina of the aborting cow was afterwards inserted into the vagina of a healthy, pregnant cow or sheep, these latter invariably aborted within a month. So Roloff relates that in two large stables at Erfurt, without any direct inter-communication, but filled with cows fed and managed in precisely the same way, abortion prevailed for years in the one, while not a single case occurred in the other. Galtier finds that the virus from the aborting cow causes abortions in the sow, ewe, goat, rabbit, and guinea pig, and that if it has been intensified by passing through either of the two last-named animals it will affect also the mare, bitch, and cat.

It does not appear that it is always the same organism which causes contagious abortion. In France, Nocard found in the aborting membranes and the mucous membrane cocci, or globular bodies, singly or in chains, and a very delicate rod-shaped organism by which the disease was propagated and which survived in the womb through the interval between successful pregnancies. The Scottish commission found as many as five separate kinds of bacteria. Bang, in Denmark, found a very delicate rod-shaped organism showing its most active growth at two different depths in nutrient gelatin, and which produced abortion in twenty-one days when inocculated on the susceptible pregnant cow. In America, Chester, of Delaware, and Moore, of New York, constantly found organisms differing somewhat in the two states, but evidently of the same group with the colon germ (*Bacillus coli communis*). These were never found in the healthy pregnant womb, but in the cow that had aborted they continued to live in that organ for many months after the loss of the fetus.

We may reasonably conclude that any micro-organism which can live in or on the lining membrane of the womb producing a catarrhal inflammation, and which can be transferred from animal to animal without losing its vitality or potency, is of necessity a cause of contagious abortion. As viewed, therefore, from the particular germ that may be present, we must recognize not one from only of contagious abortion, but several, each due to its own infecting germ, and each differing from others in minor particulars, like duration of incubation, infection of the general system, and the like. In Europe the germs discovered seem to affect the general system much more than do those found in America. Bang's germ caused abortion in twenty-one days; the New York germ, inoculated at service, often fails to cause abortion before the fifth or seventh month.

Symptoms of Abortion.—As occurring during the first two or three months of gestation, symptoms may escape detection, and unless the aborted product is seen the fact of abortion may escape notice. Some soiling of the tail with mucus, blood, and the waters, may be observed or the udder may so show extra firmness and in the virgin heifer or dry cow the presence of a few drops of milk may be suggestive, or the fetus and its membranes may be found in the gutter or elsewhere as a mere clot of blood or as a membranous ball in which the forming body of the fetus is found. In water the villi of the outer membrane (chorion, Pl. XII) float out, giving it a characteristically shaggy appearance.

In advanced pregnancy abortion is largely the counterpart of parturition, so that a special description is superfluous. The important thing is to distinguish the early symptoms from those of other diseases, so that the tendency may be arrested and the animal carried to full time if possible. A cow is dull, sluggish, separate from the herd, chewing the cud languidly, or there may be frequent lying down and rising, uneasy movements of the hind feet or of the tail, and slightly accelerated pulse and breathing, and dry muzzle. The important thing is not to confound it with digestive or urinary disorder, but in a pregnant cow to examine at once for any increase of mucus in the vagina, or for blood or liquid there or on the root of the tail; for any enlargement, firmness, or tenderness of the udder; or in dry cows examine for milk; and above all for any slight straining suggestive of labor pains.

In many cases the membranes are discharged with the fetus; in others, in advanced pregnancy, they fail to come away, and remain hanging from the vulva, putrefying and falling piecemeal, finally resulting in fetid discharge from the womb. According to the size of the herd, contagious abortions will follow one another at intervals of one to four or more weeks, in the order of their infection or of the recurrence of the period of activity of the womb which corresponds to the occurrence of heat.

Prevention.—Weakness and bloodlessness are to be obviated by generous feeding, and especially in ailments (wheat bran, rape cake, cotton seed, oats, barley, beans, peas, etc.), rich in earthy salts, which will also serve to correct the morbid appetitie. This will also regenerate the exhausted soil if the manure is returned to it. In the same way the application of ground bones or phosphates will correct the evil, acting in this case through the soil first and raising better food for the stock. The ravages of worms are to be obviated by avoiding infested pastures, ponds, streams, shallow wells, or those receiving any surface leakage from land where stock go, and by feeding salt at will, as this agent is destructive to most young worms.

The tendency to urinary calculi in winter is avoided by a succulent diet (ensilage, steamed food, roots, pumpkins apples, potatoes, slops), and by the avoidance of the special causes named under "Gravel." Furnishing water inside the barn in winter in place of driving once a day to take their fill of ice cold water will obviate a common evil. Putrid and stagnant waters are to be avoided. Sudden changes of food are always reprehensible, but much more so in the pregnant animal. Let the change be gradual. Carefully avoid the use of spoiled or unwholesome food.

In case of prevalence of ergot in a pasture it should be kept eaten down or cut down with a mower so that no portion runs to seed. In case of a meadow the grass must be cut early before the seeds have filled. The most dangerous time appears to be between the formation of the milky seed and the full ripening. Yet the ergot is larger in proportion to the ripeness, so that the loss of potency is made up in quantity. The ripe seed and ergot may be removed by thrashing and the hay safely fed. It may also be noted that both ergot and smut may be safely fed in moderate quantity, provided it is used with succulent food (ensilage, roots, etc.) or with free access to water, and salt is an excellent accessory as encouraging the animal to drink. Both ergot and smut are most injurious in winter, when the water supply is frozen up or accessible only at long intervals. The ergoted seed when thrashed out can not be safely sown, but if first boiled it may be fed in small amount or turned into manure. The growth of both ergot and smut may be to a large extent prevented by the time-honored Scotch practice of sprinkling the seed with a saturated solution of sulphate of copper before sowing.

Fields badly affected with ergot or smut may be practically renewed by plowing up and cultivating for a series of years under crops (turnips, beets, potatoes, buckwheat, etc.) which do not harbor the fungus and which require much cultivation and exposure of the soil. Drainage and the removal of all unnecessary barriers to the free action of sunshine and wind are important provisions.

Other precautions concerning separation from cows in heat—a proper construction of stalls, the avoidance of carrion and other offensive odors, protection from all kinds of mechanical injuries including overdriving and carrying by rail in advanced pregnancy, the exclusion of all irritants or strong purgatives and diuretics from food or medicine, and the guarding against all causes of indigestion and bloating—have been sufficiently indicated under "Causes." For protection of the womb and fetus against the various causes of disease, available methods are not so evident. For cows that have aborted in the last pregnancy, chlorate of potash, 3 drams daily before the recurrence of the expected abortion, has been held to be useful.

REATMENT OF NON-CONTAGIOUS ABORTION.

Although the first symptoms of abortion have appeared, it does not follow that it will go on to completion. So long as the fetus has not perished, if the waters have not been discharged, nor the waterbags presented, attempts should be made to check its progress. Every appreciable and removable cause should be done away with, the cow should be placed in a quiet stall along, and agents given to check the excitement of the labor pains. Laudanum in doses of 1 ounce for a small cow or 2 ounces for a large one should be promptly administered and repeated in three or four hours, should the labor pains recur. This may be kept up for days or even weeks if necessary, though that is rarely required, as the trouble either subsides or abortion occurs. If the laudanum seems to lack permanency of action, use bromide of potassium, or, better, extract of Viburnum prunifolium (40 grains), at intervals of two or three hours until five or six doses have been given.

PREVENTION AND TREATMENT OF CONTAGIOUS ABORTION.

So far as this differs from the treatment of sporadic abortion, it consists in separation and the free use of germicides or disinfectants.

(1) Separate all aborting cows in isolated building, yard, and pasture, allowing no other cows to have access even to their manure, liquid or solid. Not even breeding ewes, goats, sows, rabbits, or mares should be allowed to go from the isolated to the non-infected premises. Separate attendants and utensils are desirable.

(2) Scrape and wash the back part of the stall and gutter and water it with a solution of 5 ounces sulphate of copper (bluestone) in 1 gallon pure water. Repeat this cleaning and watering at least once a week. This should in all cases be applied to every stall where an aborting cow has stood and to those adjacent. To treat the whole in the same way would be even better, as it is impossible to say how many of the cows harbor the germ. This is the more needful as that in one to three years,

if the aborting cow is kept on, she becomes insusceptible and carries her calf to full time. A cow may therefore be infecting to others though she herself no longer aborts.

(3) Dissolve 1 dram corrosive sublimate, 1 ounce each of alcohol and glycerine, and shake this up in a gallon of water, to use as an injection into the vagina and a wash for the parts about the vulva and root of the tail. Being very poisonous, it should be kept in a wooden barrel out of the way of animals or children. Every morning the vulva, anus, back of the hips, and root of the tail should be sponged with this liquid, and this is best applied to the whole herd. A 1 per cent solution of carbolic acid is a good substitute.

(4) When any case of abortion has occurred the fetal membranes must be removed by the hand without delay, and, together wtih the fetus, destroyed by burning or boiling, or buried deeply, and the stall should be cleansed and watered freely with the copper solution. Then the womb should be washed out with 1½ gallons of the corrosive sublimate solution injected through a rubber tube introduced to the depth of the womb and with a funnel in its outer elevated end. This should be repeated daily for a week. In the case of the other non-pregnant cows of the herd one injection of the same kind should be made into the vagina, after which they need only have their external parts and tail washed with the solution daily.

(5) Do not breed aborting cows for two or three months, then use a separate bull, injecting his sheat and washing his belly before and after each service with the carbolic acid solution. Exclude all outside cows from service by the regular herd sire and, in purchasing breeding animals, subject them to quarantine and treatment before placing them in the sound herd.

As a certain number of the cows will harbor the germ in the womb when treatment is started, it is not to be expected that abortions will cease at once, but by keeping up the treatment the trouble may be got rid of in the following year. As an aborting cow is usually of little use for the dairy, it is best to separate and fatten her and apply treatment to those that remain. In this, as in other delicate manipulations, the stock owner will consult his own interest by employing an accomplished veterinarian and avoiding such as have not had the privileges of a thorough professional education. In addition to the above, the removal of all manure and contaminated litter and the sprinkling of the surface with the sulphate of copper solution is called for. Drains should no less be thoroughly rinsed and disinfected. Milking stools, and other implements may be treated in the same way, or with carbolic acid or boiling water. Great care should be taken to guard against bull or cows from an aborting herd or district; streams even may be suspected if there is an aborting herd near by and higher up on that stream. Cows sent to bull from an aborting herd are to be positively denied, and workmen that have attended on such a herd should be made to wash and disinfect their clothes and persons.

SYMPTOMS OF CALVING.

In the cow the premonitions of calving are the enlargement of the udder, which becomes firm and resistant to the touch, with more or less swelling in front, and yields a serious milky fluid; the enlargement and swelling of the vulva, which discharges an abundant stringy mucus; the drooping of the belly, and the falling in of the muscles at each side of the root of the tail, so as to leave deep hollows. When this last symptom is seen calving may be counted on in twenty-four hours or in two or three days. When the act is imminent, the cow becomes uneasy, moves restlessly, leaves off eating, in the field leaves the herd, lies down and rises again as if in pain, shifts upon her hind feet, moves the tail, and may bellow or moan. When labor pains come on the back is arched, the croup drooped, the belly is drawn up, and straining is more or less violent and continuous. Meanwhile blood may have appeared on the vulva and tail, and soon the the clear water bags protrude between the lips of the vulva. They increase rapidly, hanging down toward the hocks, and the fore or hind feet can be detected within them. With the rupture of the bags and escape of the waters the womb contracts on the solid angular body of the fetus and is at once stimulated to more violent contractions, so that the work proceeds with redoubled energy to the complete expulsion. This is the reason why it is wrong to rupture the water bags if the presentation is normal, as they furnish a soft, uniform pressure for the preliminary dilation of the mouth of the womb and passages, in anticipation of the severe strain put upon them as the solid body of the calf passes.

The cow often calves standing, in which case the navel string is broken as the calf falls to the ground. If, however, she is recumbent, this cord is torn through as she rises up. The afterpains come on three or four hours later and expel the membranes, which should never be left longer than twenty-four hours.

FOOT-AND-MOUTH DISEASES.

This disease is also known as epizootica aphtha, aphthous fever, infectious aphtha, eczma epizootica, and may be defined as an acute, highly contagious fever of a specific nature, characterized by the eruption of vesicles, or blisters, in the mouth, around the coronets of the feet, and between the toes.

The tremendous ravages of the disease are seen in the number and variety of species attacked. While it may be regarded as essentially a disease of cattle, hogs would seem to be as easy a prey. Almost in the same grade of receptivity come sheep and goats. Next in order of liabilty come the buffalo, American bison, camel, deer, chamois, Llama, giraffe, and antelope. Horses, dogs, cats, and even poultry have been victims of the infection, the last three classes being particularly dangerous as carriers of the contagion. Man himself is not immune, and the frequency of his infection by coming in contact with the diseased animals themselves is established by numerous observations. Children suffer as a result of drinking the unboiled milk from infected animals. There is fever and difficulty in swallowing, followed by an eruption of blisters in the mouth and very rarely by similar ones on the fingers. The disease is very seldom fatal, and chiefly restricted to children and to those adults who handle sick animals or drink large quantities of unboiled milk. Some veterinarians regard the human affection as by no means uncommon in countries where foot-and-mouth disease prevails, but that the disturbance of health is usually too slight to come to the notice of the family doctor.

The disease prevails in European countries and occasions great losses. Although the actual mortality is quite low, serious losses result from the diminution of the milk secretion and consequent interference with the business of the dairy. There is likewise more or less loss of flesh in animals.

Every appearance of foot and mouth disease upon American soil has been quickly followed by the total suppression of the disease, and it will therefore be necessary to go abroad for evidences of the devastation which always follows in the wake of an outbreak of this scourge and for estimates of the loss which it entails upon the farmers and stock owners in affected districts.

According to the very accurate statistics collected by the German Empire, 431,235 head of cattle, 230,868 sheep and goats, and 153,808 swine were affected with the disease in that country in 1890. The infection, quite insignificant in 1888, had been gradually spreading until it reached the enormous figures given above in 1890. During this same year it prevailed in France, Italy, Belgium, Austria-Hungary, Switzerland, Roumania, and Bulgaria.

The losses from this disease in England in the year 1883 were estimated at $5,000,000. An English practitioner of wide experience states that it is none too high to place the loss upon each animal that becomes infected but that ultimately recovers at $20, when milch cows or feeding cattle that are nearly finished are under consideration. On store cattle and calves the loss is proportionally less.

Estimating the losses upon the surviving animals from this basis and adding the value of those that die, it will be seen that an outbreak of this disease may quickly result in direct losses of many millions of dollars. In addition to this, a considerable spread of the contagion in this country would entail the entire loss of our export trade in live animals, interruptions of domestic commerce, and quarantines, which would surpass the loss caused by the ravages of the disease.

Unlike most other infectious diseases, foot-and-mouth disease may attack the same animals repeatedly. The immunity or protection conferred is thus only of limited duration. Hence protective inocculation with the virus, in whatever manner it may be practiced, is not only of no use, but decidedly dangerous, as it will introduce the disease. It is, however, not uncommon in European countries to practice inocculation after the disease has appeared in a herd in order to hasten its progress. This is highly recommended by some, since it not only hastens the infection, but the disease is apt to be milder and limited to the mouth. It consists in rubbing with the finger or a piece of cloth a little of the mucus from the mouth of a diseased animal upon the inner surface of the upper lip of those to be inocculated. From 50 to 75 per cent of the inocculated animals take the disease.

Cause.—As with outher communicable diseases, the source and origin of foot-and-mouth disease has given rise to much speculation. The disease had been known in Europe for centuries, but it, until a comparatively recent date that the erroneous conceptions of its spontaneous origin as a result of climatic and meteorological conditions, exhausting journeys, etc., were abandoned. It is now conceded that foot-and-mouth disease is propagated by a specific virus and that every outbreak starts from some pre-existing outbreak.

The causative agent of this disease has not been isolated, although numerous attempts have been made to cultivate and stain it. Experiments have shown that the virus will pass through standard germ proof filters, thus indicating its minute size and the reasons it has not been detected by the staining methods. The contagion may be found in the serum of the vesicles on the mouth, feet, and udder; in the saliva, milk, and various secretions and excretions; also in the blood during the rise of temperature.

A wide distribution of the virus and a rapid infection of a herd is the result. Animals may be infected directly, as by licking, and in calves by sucking, or indirectly by fomites, such as infected manure, hay, utensils, drinking troughs, railway cars, animal markets, barnyards, and pastures. Human beings may carry the virus on their clothing and transmit it on their hands when milking, since the udder is occasionally the seat of the eruption. Milk in a raw state may also transmit the disease to animals fed with it.

The observations made by some veterinarians would lead us to suppose that the virus is quite readily destroyed. It is claimed that stables thoroughly cleaned become safe after drying for a short time. Hence litter of all kinds, such as manure or soiled hay and straw, may remain infective for a longer time because they do not dry out. Other authorities maintain that the virus is quite tenacious and may live in stables even so long as a year. They also state that animals which have passed through the disease may be a source of infection for several months after recovery.

Symptoms.—In three to six days after the exposure of the animal to the infection the disease makes its appearance. It is first indicated by the animal suffering from a chill, quickly followed by an invasion of fever, which may cause the temperature to rise as high as 106°F. Following this in one or two days it will be noticed that small vesicles about the size of hemp seeds or peas are making their appearance upon the mucous membranes of the mouth at the border and upper surface of the tongue near the tip, the inside of the cheeks, on the gums and the inner surface of the lips, or on the margin of the dental pad. These little blebs contain a yellowish watery fluid and gradually become more extensive as the disease advances. Soon after the eruptions have appeared in the mouth of the animal it will be noticed that there is considerable swelling, redness, and tenderness manifest about the feet, at the coronet and between the digits of each foot. Eruptions similar to those within the mouth make their appearance upon these swollen regions of the foot a day or two later, and at this stage it is usual to find that like lesions have made their appearance upon the perineum of the victim. In the case of milch cows the udder and more particularly the teats show the same vesicular eruption, but later as the result of milking soon become covered with reddened spots deprived of the superficial layer of skin and may develop deep, obstinate fissures.

As soon as the disease has become well established the patient evinces pain when attempting to eat; in fact, the appetite is often so seriously affected that all food is refused and the animal uneasily opens and shuts its mouth with a characeristic smacking sound, while strings of cohesive, ropy saliva hang suspended from the lips. With the advance of the disease the vesicles have widened and extended until they may reach a diameter from that of a dime to that of a silver dollar. These ruptures, soon after their appearance, sometimes on the first day, more rarily on the second or third day. After they have ruptured the grayish white membrane forming the blister may remain attached for a day or more or disappear speedily and leave deeply reddened sensitive spots or erosions behind, both within the mouth and upon the coronet and between the claws of the feet. The same ulceration may be noticed in cases in which the teats of milch cows have become affected, and instances are reported in which sloughing of the tegument immediately around the ulcer upon the udder has occurred. Owing to the tough, fibrous nature of the bovine skin, it is exceeding rare for sloughing to occur upon any part of the body other than those mentioned.

The attack upon the feet of an animal is frequently manifested in all four feet at once, but one or more of the feet may entirely escape and remain unaffected throughout the course of the disease. As the feet become sensitive and sore the animal lies down persistently, and it has been found that bed sores develop with amazing rapidity in all such cases and wholly baffle all attempts at treatment until after the patient has regained its feet.

The disease may attack some of the internal organs before it appears upon any of the external tissues. These cases are very liable to prove quickly fatal. The animal dies from paralysis of the heart due to the formation of poisonous principles within the system, or it may suffocate by reason of the action of these same poisons upon the tissues of the lungs, or it may choke to death as a result of paralysis of the throat.

In cases of serious affection of the udder the erosions will often be found located within the passages of the teats, resulting in a "caked" udder, and the same toxic poisoning, which is the cause of death in the apoplectiform types just mentioned, may arise from this source. In any event the milk from such cases will be fond dangerous for use, causing fatal diarrhea in sucking calves or young pigs and serious illness in human consumers. The milk obtained from cows suffering with foot-and-mouth disease is not readily converted into either butter or cheese, but remains thick, slimy, and inert in spite of churning and attempts at curdling. The ulceration of the interdigital tissue may extend to the ligaments of the fetlock or produce disease of the joint or bone. Pregnant animals may abort. In pigs, sheep, and goats the lesions in the foot are most common, but both forms may be observed or only the mouth lesions.

When the disease has become fully established it will be found that the duration of the attack will vary greatly with different animals. From ten to twenty days are usually required for the recovery of the normal appetite and spirits in mild outbreaks, while the return to a full flow of milk, in the case of milch cows, is seldom witnessed before the arrival of the following season.

In the malignant type of the disease it requires from three months to a year for an animal to recover. The mortality is not great, generally about 1 to 3 per cent, but in severe outbreaks it may reach 5 per cent. It is more fatal in young animals that have been fed on infected milk, and produces death in from 60 to 80 per cent of these cases as a result of gastro-enteritis.

Diagnosis.—The recognition of this affection should not, as a rule, be difficult, especially when the disease is known to be in the vicinity; in fact the group of symptoms form a clinical picture too decided to be doubted. The combination of high fever, vesicular inflammation of the mouth, and hot, painful, swollen condition of feet, followed in twenty-four to forty-eight hours by the appearance of numerous small vesicles varying in size from that of a pea to that of a hazel nut on the udder and feet and in the mouth should prevent any serious or long-continued error in the diagnosis. However, in the inoculation of calves we have a certain final test. In twenty-four to seventy-two hours after inoculation the calves present the characteristic vesicles. Such inoculation should be practiced, however, only by officials who are properly authorized to deal with contagious diseases.

Differential Diagnosis.—It can be asserted positively that no disease of cattle closely simulates the symptoms of the eruption of aphthous fever on the lining membrane of the mouth. Cowpox or horsepox may be accidentally transmitted by inoculation. But the eruption in the "pox" goes on to the development of a pustule, while in foot-and-mouth disease the eruption is never more than a vesicle, even though the contained fluid may become turbid.

The inoculation test in the case of cowpox does not respond with fever and eruption for at least ten days, and often longer.

In mycotic stomatitis or inflammation of the lining membrane of the mouth the entire buccal cavity is inflamed and in a few days the croupops membrane forms, peels off, and exposes a raw, bleeding surface, while the thin skin between the toes may also be inflamed. The previous history of the case: the failure of the vesicles, if any appear, to spread extensively; the absence of vesicular eruptions on other portions of the body, notably the udder and teats, and characteristically, the hoof, together with the absence of infection in the herd and the complete negative character of inoculation of calves, distinguish between the local disease named and foot-and-mouth disease.

The lesion resulting from ergotism may be differentiated from those of foot-and-mouth disease by the lack of eruptions in the mouth and by the location of the disease at the tips of the ears, end of the tail, or upon the lower part of the legs, usually below the knees or hocks. The lesion of ergotism does not take the form of pustules or blisters, but manifests itself first as a swelling about the ankle, which later may slough and circumscribe the limb, forming a deep crack extending entirely around the limb and forming a distinct line of demarcation between the healthy skin above and the diseased below. The absence of ulerous sores on the coronet and between the claws, together with a healthy condition of the membranes of the mouth and the knowledge that the lesion upon the limb in question extends uninterruptedly around it, should point conclusively to a diagnosis of ergotism and to the exclusion of all fears of foot-and-mouth disease.

In foul foot or ground itch of cattle the inflammation of the skin and toes is general and not in certain spots as in foot-and-mouth disease; the mouth remains unaffected, and the presence of the disease may be traced to filth and poor drainage.

These severer forms of the disease might be confounded with certain general diseases. Where gastro-intestinal symptoms predominate acute gastric catarrh or inflammation of the intestines might be thought of. Involvement of the lungs might lead to a diagnose of acute congestion of the lungs or pneumonia. The distinction is apparent in these diseases by the lack of vesicular eruption on the mucous membrane or skin, and also by lack of evidences of infection in the herd or neighboring animals.

Prophylaxis.—The measures to be adopted to prevent the spread of the affection must take into consideration the highly infectious nature of the disease, its ease of dissemination, and the liability of the virus to live a sapropytic life for long periods. Great care should therefore be observed in keeping healthy animals unexposed to the contagion. When an outbreak occurs in a community the owner should make every effort to keep other animals from coming in contact with his diseased cattle. This especially applies to dogs, cats, goats, and poultry, which usually have access to the stables and barnyards and in this way furnish excellent means for disseminating the infectious principle. He should be equally particular in prohibiting any person from coming onto his premises, especially an attendant or owner or other person in any way connected with cattle. Such a herd may be placed under quarantine, with an inspector appointed to keep the premises under constant surveillance.

This method of quarantine alone, while very satisfactory in many instances, is rather tardy in obtaining the desired result. For the reason when the disease breaks out in a country like the United States, where the contagion is likely to spread rapidly by means of infected cars, manure, hay, and other feed, and where the loss attendant upon its obtaining a firm foothold would result so disastrously, it seems that this method of temporizing is rather tedious, and more radical steps are required in order to suppress and eradicate completely the infection in the quickest and most thorough manner possible.

It would therefore appear better to concentrate the expense incident to the extermination of foot-and mouth disease by purchasing and slaughtering all affected and exposed cattle after judicious appraisement. The carcasses of these animals should be totally destroyed, preferably by cremation, or otherwise by burying them in a hole six feet deep and covering them with air-slaked lime. The infected stable should be disinfected by thoroughly cleaning it, scrubbing the floor with hot water, brushing down all loose dust from the walls, and tearing off all woodwork which is partly decayed. Then the whole interior of the stable should be covered with a good coat of limewash containing one part of 40 per cent solution of formaldehyde (which is sold by the drug trade under the commercial name of formalin) to 30 parts of the limewsh, or four ounces of formalin to each gallon of limewash. Another efficient wash for this purpose may be prepared by adding six ounces of chloride of lime to each gallon of limewash. All stable utensils should be thoroughly cleaned and disinfected by the application of a solution containing four ounces of formalin to a gallon of water, or six ounces of crude cabolic acid to each gallon of water. The manure should be burned or spread over ground (other than meadow land) that is to be turned under. No other cattle should be purchased for at least thirty days after the complete disinfection of the premises.

The method of eradicating the outbreak of foot-and-mouth disease in New England in 1902-3 consisted in the rigid quarantine of all infected premises and of the animals upon them, in slaughtering the diseased and exposed animals at the earliest practicable moment, and in thoroughly disinfecting the stables and the contents of the buildings in which they had been sheltered. The progress of this work, the confinement of the disease to four of the New England states, and its complete eradication in a comparatively short time demonstrate in a striking manner the efficacy of slaughtering and the futility of relying upon quarantine alone in stamping out the disease.

Inoculation has been adopted in some countries in order to have the disease spread quickly through the herds, and while this practice has undoubted value where the disease is indigenous, it is not desirable in this country and should not be adopted.

Medicinal Treatment.—In some mild attacks of foot-and-mouth disease great benefit may be derived from a judicious attempt to relieve the symptoms and thus assist nature in overcoming the disease, but the great danger attached to the presence of an infectious disease in any noninfected locality for twelve to twenty days, while the disease is running its course, must appeal to the sanitarian and prevent indiscriminate medicinal treatment.

However, benficial results have been obtained by the local application of disinfecting and astringent lotions. A teaspoonful of alumn, chlorate of potash, boracic acid, or one-half teaspoonful of the tincture of aloes and myrrh placed in the mouth has proved efficacious. The infected animals may be made to stand from five to ten minutes in a shallow trough containing medicinal agents such as a 1-to-1,000 solution of bichloride of mercury or a 3 per cent carbolic acid or creolin solution. Where the teats and udder are affected the application of carbolized vaseline, camphor ointment, or borated glycerin has given excellent results. If the symptoms of heart weakness are manifest, give digitalis, camphor, or alcohol, while excessive fever may be reduced with phenacetin.

The complications that may follow the disease are usually the result of contaminating bacteria, and it is therefore desirable to have the animals and their surroundings kept in as cleanly a condition as possible. The cattle should be fed on soft meal or grain and given a plentiful supply of clean water.

THE TUBERCULIN TEST.

The tuberculin test, which is marvelously accurate in its indications, has been almost universally adopted for the detection of tuberculosis. Tuberculin is a drug prepared by sterilizing, filtering, and concentrating the liquids in which the tubercle bacillus has been allowed to vegetate. It contains the cooked products of the growth of these bacilli, but not the bacilli themselves. Consequently, when this substance is injected under the skin of an animal it is absolutely unable to produce the disease, cause abortion, or otherwise injure the animal. In case the injected animal is normal there is no more effect upon the system than would be expected from the injection of sterile water. However, if the animal is tuberculous, a decided rise of temperature will follow the use of tuberculin. This substance, discovered by Koch, has the effect when injected into the tissues of a tuberculous animal of causing a decided rise in temperature, while it has no such effect upon animals free from the disease. The value of tuberculin for this purpose was tested during the years 1890 and 1891 by Guttman, Roeckl and Schutz, Bang and Salomonsen, Lydtin, Johne and Siedamgrotzky, Nocard, and many others. It was at once recognized as a most remarkable and accurate method of detecting tuberculosis even in the early stages and when the disease had yet made but little progress.

The tuberculin test came into existence through the most careful and thorough scientific experimentation. In practice it is applied by first taking the temperature of the animal to be tested, at intervals of about two hours, a sufficient number of times to establish the normal temperature of the body under the ordinary conditions of life. The proper dose of tuberculin is then injected under the skin with a hypodermic syringe between 8 and 10 P.M. on the day of taking the prelimnary temperatures. On the following day the temperatures are taken every two hours, beginning at 6 A. M. and continuing until twenty hours following the injection, if the fullest information is desired. From average temperatures calculated by De Schweinitz in 1896 of about 1,600 tests of tuberculous cows, it appears that in general rise of temperature begins from five and one-half to six hours after the tuberculin is injected, reaches its greatest height from the sixteenth to the twentieth hours, and then gradually declines, reaching the normal again by the twenty-eighth hour.

As a result of this method an accurate diagnosis may be established in over 97 per cent of the cases tested. The relatively few failures in diagnoses are included among two classes of cattle. The first class contains those that are tuberculous, but which do not react either because of the slight effect of an ordinary-sized dose of tuberculin on an advanced case of the disease with so much natural tuberculin already in the system, or on account of a recent previous test with tuberculin which produces a tolerance to this material lasting for about six weeks. The second class includes those that are not tuberculous, but which show an elevation of temperature as a result of (a) advanced pregnancy, (b) the excitement of oestrum, (c) concurrent diseases, as inflammation of the lungs, intestines, uterus, udder, or other parts, abortion, retention of afterbirth, indigestion, etc., (d) inclosure in a hot stuffy stable, especially in summer, or exposure to cold drafts or rains, (e) any change in the method of feeding, watering or stabling of the animal during the test. Notwithstanding all these possibilities of error, the results of thousands of tests show that in less than 3 per cent of the cases tested do these failures actually occur. In the first class the chances of error are decidedly reduced by the skilled veterinarian by making careful physical examination and diagnosing clinically these advanced cases, and by the injection of double or triple doses into all recently tested cattle, with the taking of the after temperatures, beginning two hours following the injection and continuing hourly for twenty hours.

It is therefore apparent that tuberculin should only be applied by or under the direction of a competent veterinarian, capable not only of injecting the tuberculin but also of interpreting the results, and particularly of picking out all clinical cases by physical examination. The latter observation is extremely important and should always be made on every animal tested.

In the second class errors are avoided by eliminating those cases from the test that are nearing parturition or are in heat or show evidence of the previously mentioned diseases or exhibit temperatures sufficiently high to make them unreliable for use as normal. Then, in reading after temperatures it is advisable not to recognize as a reaction an elevation of temperature less than 2° F. and which at the same time must go above 103.8° F., and the temperature reaction must likewise have the characteristic rainbow curve. (Those cases which approximate but do not reach this standard should be considered as suspicious and held for a retest six weeks later). In addition, a satisfactory tuberculin must be used, also an accurate thermometer and a reliable syringe, in order that a sufficient dose of tuberculin may be given. Finally, the number of apparent errors of the tuberculin test will be greatly diminished if a careful post-mortem examination is made, giving especial attention to the lymph glands. This low percentage of failures being the case, cattle owners should welcome the tuberculin test, not only for their own interest but for the welfare of the of the public as well. There this method of diagnosing the disease has been adopted tuberculosis is gradually being eradicated, while it is spreading rapidly and becoming widely disseminated in those districts where the tuberculin test has not been employed. Without its use the disease can not be controlled and the cattle owner is confronted with serious and continuous losses; with its use the disease can be eradicated from the herd, a clean herd established in a few years without very serious loss or hardship, and the danger of its spread to man removed. Tuberculin may therefore be considered a most beneficial discovery for the stock raiser. Strange to say, many of these men have been incredulous, antagonistic, or prejudiced against the tuberculin test by misinterpreting published statesments, by incorrect unsubstantiated, or exaggerated reports, and by alleged injurious effects to healthy cattle.

Law has clearly stated the question when he says:

"Many stock owners sitll entertain an ignorant and unwarranted dread of the tuberculin test. It is true that when recklessly used by ignorant and careless people it may be made a root of evil, yet as employed by the intelligent and careful expert it is not only perfectly safe, but it is the only known means of ascertaining approximately the actual number affected in a given herd. In most infected herds living under what are in other respects good hygienic conditions two-thirds or three-fourths are not to be detected without its aid, so that in clearing a herd from tuberculosis and placing both herd and products above suspicion the test becomes essential. In skilled hands the tuberculin test will show at least nine-tenths of all cases of tuberculosis when other methods of diagnosis will not detect one-tenth."

It is perfectly natural that there should be objection to its use among those who are not acquainted with its method of preparation or its properties, but it is difficult to explain the antagonism of farmers who are familiar with the facts connected with the manufacture and use of tuberculin. Probably the most popular objection to tuberculin is that it is too searching, since it discovers cases in which the lesions are small and obscure. While this fact is admitted, it should also be borne in mind that such a small lesion today may break down and become widely disseminated in a relatively short period. Therefore any cow affected with tuberculosis even to a slight degree must be considered as dangerous not only to the other animals in the herd but also to the consumer of her products.

In 1898, Bang, of Copenhagen, one of the highest European authorities, in his paper presented to the Congress for the Study of Human and Animal Tuberculosis, at Paris, said:

"Numerous tests made in almost every civilized country have demonstrated that in the majority of cases tuberculin is an excellent means for diagnosing, the existence or the non-existence of the disease, but giving us no positive information as to the extent to which the disease has progressed. When tuberculin produces a typical reaction we may be almost sure that there exists in the body of the animal a tubercular process. The cases in which a careful examiner has not succeeded in finding it are very rare, and I am led to believe that when, notwithstanding all the pains taken, it has escaped discovery, the reason is that it is located in a portion of the body that is particularly inaccessible. Nevertheless, it is not to be denied that a fever, entirely accidental and of short duration, may in some rare cases have simulated a reaction. However this may be, the error committed in wrongly condemning an occasional animal for tuberculosis is of no practical consequence.

"A worse aspect of the case is that there are some diseased animals in which tuberculin fails to discover the existence of tuberculosis. In most of these, no doubt, the deposits are old, insignificant, and generally calcified, or they are cases where the disease is arrested and perhaps in process of recovery, and which are possibly incapable of disseminating the contagion. But it is known that there are cases, not altogether rare, where tuberculin fails to cause a reaction in a highly tuberculous animal, and consequently one in which the disease exists in an extremely contagious form. For this reason a clinical examination should always be made of an animal which does not give a reaction, but which shows symptoms indicating that notwithstanding the test it may suffer from tuberculosis."

Nocard, of Paris, wrote also in 1898 as follows:

The degree of certainty of the indications furnished may be stated in precise terms. The observation of a clear reaction to tuberculin is unequivocal; the animal is tuberculous. The pretended errors imputed to the method are explained by the extreme sensitiveness of the reagent which is capable of detecting the smallest lesion. It often requires prolonged and minute researches in the depths of all the tissues to discover the few miliary centers, the presence of which has been revealed. The reaction is absolutely specific. In those cases where it is observed with animals which show lesions of another disease (actinomycosis, hydatid disease, verminous bronchitis, distomatosis), it may be affirmed that there exists, in addition to these conspicuous changes, a tuberculous center which alone has provoked the reaction.

"The failure to react does not necessarily imply absence of tuberculosis. Such failures of tuberculin are very exceptional. They are seen most frequently with animals affected with tuberculosis in a very advanced stage and made evident by plain external signs. Sometimes, also, there are found at the post-mortem examination of animals which have not reacted small fibrous or calcified lesions in such a condition that one is tempted to believe them cured. Whether sterile or not these lesions have no tendency to increase, and they are not very dangerous from the point of view of contagion."

These opinions of two eminent authorities, living in different countries, after long experience of their own and after studying the results of the many tests made in different parts of the world, should have great weight. They are essentially the same throughout.

In 1897 Voges compiled statistics of tuberculin tests the accuracy of which has been determined by post-mortem examination. Of 7,327 animals tested it appeared that errors had been made with 204, or 2.78 per cent. In the work of the Pennsylvania Live Stock Sanitary Board post-mortem examinations were made on about 4,400 reacting cattle and the disease was found in all but eight of those which had given characteristic reactions.

The results of a much larger number of tests might be compiled at this time but they would not materially change the average of those already mentioned. It is plain that tuberculin is a remarkably accurate test of tuberculosis; that the animals which react may be safely considered as tuberculous and that when a careful clinical examination is practiced in addition to the test there are few animals in a dangerous condition which escape detection.

The first questions asked by those who oppose the adoption of the tuberculin tests are: Is this test infallible? and, if it is not infallible, why should it be forced upon the cattle owners of the country?

In answer to these questions it may be said that tuberculin is not absolutely infallible, and yet it is by far the best method of diagnosing tuberculosis that has been discovered. It is much better than any test known for pleuro-pneumonia when that disease was eradicated.

Practically all the animals that react are affected with tuberculosis and should be separated from the herd, not only in the interest of the public but in the interest of the owner of the herd. The best authorities admit, after studying many thousands of tests, that there are few, if any, mistakes made in condemning cattle which show a typical tuberculin reaction. The errors are principally in the other direction—that is, some tuberculous animals are not discovered by the tuberculin test, but as the most dangerous of these may be picked out by ordinary clinical examination the fault of tuberculin is not so serious as it at first sight appears. This being the case, it should not be necessary to force the tuberculin test upon owners. They should be anxious to adopt it in their own interests and for the protection of their patrons. There is today no greater danger to the cattle and hog industries than that which confronts them in the form of tuberculosis, a disease already widespread and rapidly extending. Furthermore, tuberculin must be considered as harmless for healthy animals in view of the results revealed by numerous tests covering vast numbers of animals. And it has also been clearly demonstrated that tuberculin interferes in no way with the milking function in healthy cattle; neither in the quantity of milk nor in butterfat value has any variation been detected. The conclusions of some of the best authorities on the subject of its harmlessness to healthy animals are given below.

Norcard and Leclainche state:

"Direct experiments and observations collected by thousands show that the tuberculin injections have no unfavorable effect. With healthy animals the system is indifferent to the inoculation; with tuberculous animals it causes slight changes which are not at all serious."

Bang has written as follows on this question:

"We will now consider the following question, a very important one, in the application of tuberculin, viz.: Can the reaction produce a worse condition in tuberculous animals than before existed? Hess emphatically states that it can, and on this account he earnestly warns against its application. My attention has been directed to this question from the beginning. In my first publication on tuberculin injection I reported two cases in which acute miliary tuberculosis was proved in two high-grade tuberculous cows several weeks after the tuberculin injection. I then stated my suspicion that perhaps the tuberculin injection had some connection with this, just as is often supposed to be the case in human practice. With my present very large amount of material for observation at hand I may express the following opinion: Such an acute development of tuberculosis as a result of tuberculin injection is to be feared only exceptionally, and then in cases of advanced tuberculosis. It must not be forgotten that acute miliary tuberculosis by no means rarely accompanies an advanced tuberculosis of long standing. It is therefore impossible to offer strict proof of the casual connection with the injection, and only oft-repeated observation could make this probably. In support of my view I offer the following: In the course of the last three years I have made careful postmortem examinations of 83 tuberculous animals, which have been removed from my experiment farm, Thurebylille. Among these were 18 (or, strictly speaking, 23) high-grade tuberculous animals. I have been able to prove miliary tuberculosis in only 4 of these. Among the others, which showed less developed tuberculosis, I have never found miliary tuberculosis, and with very many I have never found any sign of a more rapid development of the process. On the contrary, it has been proved that the disease was restricted locally, often for years, in spite of yearly repeated injections. Dissections were made at very different periods after the injections—in 17 cases from four to twelve days after the last test. In all of these cases earlier tests had been made months or years before. In 28 cases the injection took place from nineteen days to two months before the butchering: In 3 of these cases earlier injections had been made. In 38 cases from two anad one-half months to one year intervened between the last injection and the dissection. Dissection gives the best explanation of this question, but a clinical observation continued for years, of a herd tested with tuberculin can render very essential aid. If Hess's opinion is correct, it is to be assumed that tuberculosis must take an unusually vicious course in such herds, but this I have been unable to prove. At Thurbylille there has existed for three years a reacting division, consisting originally of 131 head and now of 69. Although these animals are yearly tested, and although most of them react every year, the division certainly appears to be made up of healthy animals, and the farm inspector has expressed the decided opinion that the tuberculosis in this division is no more developed than at the beginning of the experiment. The testimony of many owners of large herds of cattle which have long ago been injecetd is to the same effect. I will adduce statements from several. A farm tenant whose cattle were injected twenty months previously, when 82 per cent of the grown animals reacted, wrote me recently as follows: "Only 2 cows from the division of 100 head had been sold as decidedly tuberculous. The majority appeared afterwards, just as before, entirely healthy. The fat animals which had been slaughtered had been pronounced healthy by the butchers." Another farm tenant with a herd injected in 1894 had not been obliged to remove a single animal from the tuberculosis division, numbering 70 head. A large farm owner in Jutland stated in September that he had traced no undesirable result from the injection. His herd of 350 had been injected in February and about 75 per cent reacted. Similar answers have been given by other owners and veterinarians.

"A veterinarian who had injected 600 animals, among them a herd of a large farm, eighteen months previously, expressed the belief that the injection had produced in no single case an unusually rapid or vicious course of tuberculosis. In spite of a demand made months ago, I have received thus far no report from any veterinarian of an undesirable result.

On a large farm, on which before the injection tuberculosis had appeared in a vicious form the owner had the impression that the severe cases had afterwards become more numerous. He had, however, not suffered severe losses, and eight months later the large reacting division by no means made a bad impression. Finally, it is to be noticed that tuberculin has been employed on a large scale in Denmark for years, and still the demand from farmers constantly increases. This could certainly not be the case if the injections were generally followed by bad results.

Paige said, after the tests of the herd of the Massachusetts Agricultural College, that "its use is not followed by any ill effects of a serious or permanent nature.' "

Lamson of the New Hampshire College Agricultural Experiment Station, said: "There is abundant testimony that its use is not in any way injurious to a healthy animal."

Conn, who made a special study of the present attitude of European science toward tuberculosis in cattle, reached the following conclusions:

It has been, from the first, thought by some that the use of tuberculin produces a direct injury upon the inoculated animals. This, however, is undoubtedly a mistake, and there is no longer any belief anywhere on the part of scientists that the injury thus produced is worthy of note. In the first place, the idea that it may produce the disease in a perfectly healthy animal by the inoculation is absolutely fallacious. The tuberculin does not contain the tubercle bacillus, and it is absolutely certain that it is impossible to produce a case of tuberculosis in an animal unless the tubercle bacilli are present. The use of tuberculin, therefore, certainly can never produce the disease in the inoculated animal.

It has been more widely believed, however, that the inoculation of an animal with this material has a tendency to stimulate an incipient case of tuberculosis. It has been thought that an animal with a very slight case of the disease may, after inoculation, show a very rapid extension of this disease and be speedily brought to a condition where it is beyond any use. The reasons given for this have been the apparent activity of the tuberculosis infection in animals that have been slaughtered shortly after inoculation. This has been claimed, not only by agriculturists who have not understood the subject well, but also by veterinarians and bacteriologists. But here, too, we must recognize that the claim has been disproved and that there is now a practical unanimity of opinion on the part of all who are best calculated to judge, that such an injurious effect does not occur. Even those who have been most pronounced in the claim that there is injury thus resulting from tuberculin have, little by little, modified their claim, until at the present time they say either that the injury which they formerly claimed does not occur, or that the stimulus of the two or three who hold this very moderate opinion, all bacteriologists and veterinarians unite in agreeing that there is no evidence for believing sands of animals have been inoculated, and the veterinarians say there is absolutely no reason in all their experience for believing that the tuberculin inoculation is followed by any injurious results.

In 1898 tuberculosis was found in the large Shorthorn herd belonging to W. C. Edwards, of Canada, who with commendable promptness and public spirit had his animals tested, and at once proceeded to separate the diseased from the healthy animals. These were all finely bred animals, and the very class which we have been told are most susceptible to the injurious effects of tuberculin. After using this test regularly for two years, Mr. Edwards wrote as follows:

"I have seen nothing to lead me to believe that the tuberculin test had any injurious influence on the course of the disease. It is by no means our opinion that the disease has been stimulated or aggravated by the application of the tuberculin test. All animals that we have tested two or three times continue as hale and hearty as they were previously, and not one animal in our herds has broken down or failed in any way since we began testing."

Mr. Edwards, in December, 1901, verbally stated to the writer that his views as to the harmlessness of tuberculin remained unchanged, and that he had not seen the least ill effect with any of his cattle from its use.

Those who have had most experience with tuberculin have failed to observe any injurious effects following its use upon healthy cattle. With tuberculous cattle it produces a fever of short duration, and in the great majority of cases all derangement of the system which it causes disappears withn forty-eight hours after the tuberculin is administered. There appear to have been a very few cases in which the disease was aggravated, and a greater number in which it was benefited by the injection of tuberculin. The cases of abortion following the tuberculin test have not been numerous, even when cows were tested within a few weeks of the normal time of calving. The few cases of abortion which have occurred may be explained by the fact that abortion in cattle is a very common occurrence, and that it would inevitably happen sometimes after the tuberculin test as a mere coincidence, and without any relation between the test and the loss of the calf. The cases of abortion which have been cited appear to be no more numerous than might be expected to have occurred among the same number of cattle within the same period if the test had not been applied.

Most of the objections to tuberculin would probably be removed if some method of compensation for the reacting animals could be devised. Thus, in Pennsylvania, where tuberculosis is being eradicated with more success than in any other State, and where there are usually three times as many voluntary requests on file for the application of the test as can be made, all reacting animals are paid for by the State. As the suppression of tuberculosis is a public health measure it would appear perfectly logical for the State governments to reimburse cattle owners for animals condemned and slaughtered.

Provision could be made to pay 70 per cent of the appraised value of the condemned animals, not to exceed $30 per head for common stock or $60 for registered stock. Such legislation should also include a requirement for the testing of all cattle coming into the state.

All tuberculous animals should be slaughtered in abattoirs having federal inspection, and the money obtatined from carcasses which are inspected and passed for food, and from the hide and offal of those carcasses condemned as unfit for food, should be applied as part payment on the indemnity for their respective owners. The payment of indemnity for their respective owners. The payment of indemnity for tuberculous animals is a good business policy and would do more toward making the tuberculin test popular with cattle owners than any other possible action. And as a corollary of the latter more testing would be performed, and more tuberculous cattle would be discovered at the start, but the gradual suppression of the disease would soon be manifest, as has been noted in Pennsylvania and Denmark. Furthermore, as Stiles has mentioned, if tuberculosis can be eradicated from dairy herds with but slight loss to the owner, the increase in the price of milk would naturally be inhibited, and the children of poor families would consequently be in less danger of having this very important article of their diet decreased.

From the investigations and observations that have been mentioned it may be safely concluded:

1. That the tuberculin test is a wonderfully accurate method of determining whether an animal is affected with tuberculosis.
2. That by the use of tuberculin the animals diseased with tuberculosis may be detected and removed from the herd, thereby eradicating the disease.
3. That tuberculin has no injurious effect upon healthy cattle.
4. That the comparatively small number of cattle which have aborted, suffered in health, or fallen off in condition after the tuberculin test were either diseased before the test was made or were affected by some cause other than the tuberculin.

SUMMARY OF DIRECTIONS FOR MAKING THE TUBERCULIN TEST.

1. Stable cattle under usual conditions and among usual surroundings, feed and water in the customary manner.
2. Make a physical examination of each animal, and give to each one some designation by which the animal will be known throughout the test.
3. Take each animal's temperature at least three times at two or three hour intervals on the day of injection; for instance, at 2, 5, and 8 P. M.
4. At 8 or 10 P. M. inject a dose of tuberculin under the skin in the region of the shoulder, using a sterile hypodermic syringe after disinfecting the skin at the seat of injection with a 5 per cent solution of carbolic acid or a similar antiseptic solution.
5. Tuberculin is not always concentrated to the same degree and therefore the dose, which should always appear on the label, varies considerably. The dose of imported tuberculin is 0.25 c. c. for an adult cow, and before injection is diluted with sterile water to 2 c. c. The tuberculin made by the Bureau of Animal Industry is prepared so that it will not be necessary to dilute it, and the dose is 2 c. c. for an adult animal. Yearlings and 2-year-olds, according to size, should receive from 1 to 1½

6. The next day, at 6 A. M., commence taking temperatures, and continue every two or three hours until the twentieth hour after injection, at which time if there is no tendency for the temperature to rise the test may cease.

7. A rise of two or more degrees Fahrenheit above the maximum temperature observed on the previous day, providing this temperature exceeds 103.8° F., should be regarded as an indication of tuberculosis. Those cases which approximate but do not reach this standard should be considered as suspicious and held for a retest six weeks later, giving double the original dose.

TREATMENT OF TUBERCULOSIS.

Treatment of the disease is not seriously considered by any authorities at the present time.

The measures to be adopted to prevent the spreading of the disease must take into consideration not only the tubercle bacillus, but likewise all these circumstances which make cattle more susceptible to the disease which have already been dwelt upon. It would be useless to repeat here all that has been said above on the transmission of tubercle bacilli from one animal to another, and on the dangers of certain debilitating influences. A careful study of these will show how tuberculosis may, at least in some cases, be prevented. Great care should be bestowed upon the breeding, the surroundings, and the food of the animal, so that the latter may be put into a condition to resist infection even when exposed to it. A tuberculin test should be applied to all strange cattle before they are introduced into the herd, and those which show a reaction should be refused.

A rigid exclusion of tuberculous animals is all that is necessary to prevent the appearance of the disease, provided cattle are not infected by consumptive persons and animals, though it is probably unusual, because the bacilli from man are, in the majority of cases, attenuated and harmless for cattle.

Tuberculosis in cattle must also be considered as bearing upon tuberculosis of other domesticated animals, particularly hogs. In Europe and the United States this disease is not so uncommon among hogs, and appears to be on the increase. The reason for its existence may be looked for in the feeding of pigs with skim milk, buttermilk, and whey in dairies, with the offal of the abattoirs, behind tuberculous cattle, and the household refuse generally. If tuberculosis is common among cattle it is likely to be transmitted to hogs kept in this way.

The carcasses of animals which have died of tuberculosis should be buried deeply so that they can not be eaten by other animals. This is likewise true of all organs or tissues of slaughtered animals containing tubercles. These should never be fed to other animals, such as hogs, dogs, and cats, and should either be destroyed by fire or deeply buried.

When any of the animals in a herd of cattle show evident symptoms of tuberculosis, or when they are proved to be affected with this disease by the tuberculin test, the best method of procedure in most cases is to have the affected animals slaughtered and the stables disinfected. A large proportion of the animals which are slightly affected yield carcasses which are perfectly wholesome and fit for human food, but in all such cases there should be an inspection by an expert at the time of slaughter to determine which carcasses may be used and which should be destroyed.

The disinfection of stables may be accomplished by thoroughly cleaning them, scrubbing the floors with hot water brushing down all loose dust from the walls, and tearing off all woodwork which is partly decayed. Then the whole interior of the stable should be covered with a good coat of lime wash containing 1 part of formalin (which is a 40 per cent watery solution of formaldehyde) to 30 parts of the lime wash, or 4 ounces of formalin to each gallon of lime wash.

Similar precautions should be observed in removing the manure of the infected herd from the barnyard and other places accessible to cattle since it is known that tuberculous cattle frequently eliminate large numbers of tubercle bacilli from their bodies through the feces. The ground under the manure pile could then be disinfected either by applying the above mentioned formalin solution or unslaked lime thickly sprinkled over the soil.

If all the animals which react are destroyed and the stables disinfected in this manner, the herd should remain free from the disease unless other affected animals are added to it. The introduction of the disease in this manner may be avoided by requiring a tuberculin test of all new animals admitted on the premises.

It is unfortunately a fact that animals with tuberculosis which have been tested several times may become so accustomed to tuberculin that they will no longer react consequently it is always advisable to purchase cattle from some one who is known to be reliable, as otherwise tubercular animals may be treated with tuberculin for the purpose of hiding the disease.

In the case of very valuable thoroughbred animals it may be more advantageous to retain the reacting animals which are in good condition, in order to breed from them and in that manner avoid the excessive loss which would follow from their immediate slaughter. This may be done safely if proper percautions are adopted. The healthy animals should be separated from the diseased ones, and the stable in which the diseased animals have been should be frequently disinfected. When calves are dropped by the tubercular cows they should be immediately removed, or at least not allowed to drink the mother's milk more than once or twice, and after that fed upon the milk of healthy cows. The milk from the animals which have reacted should not be used until after it has been boiled and the tubercle bacilli thus destroyed. The young animals which are raised from tubercular dams should be tested when they are about six months old, and all those which react should be immediately slaughtered. It has been found that by following the plan suggested above not more than 1 or 2 per cent of the calves will develop tuberculosis. It is, of course, some trouble to follow this method, but it enables the owner of a pure bred herd to retain the strains of blood which he has been breeding and gradually to eliminate the disease. At the end of six or eight years he should have a herd of cattle free from tuberculosis and be prepared to destroy all of those which have reacted.

BOVINE TUBERCULOSIS AND PUBLIC HEALTH.

The increasing amount of evidence point to the identity of human and animal tuberculosis, combined with the extraordinary mortality of human beings from this disease, often amounting to 10 to 14 per cent, has raised the question in all civilized countries as to how far animal, and especially bovine, tuberculosis was to blame for this high mortality. The medical and veterinary professions have approached this problem with equal zeal, and much has come to light within recent years which enables us to come to some conclusion. If this disease is transmitted from animals to man, how does the transmission take place? As comparatively few people come in direct contact with tuberculous cattle, it must be either through the meat, the milk, the butter, the cheese, or through all of these products that the virus enters the human body. The question has thus narrowed itself down to the food products furnished by cattle.

It has become a very urgent question, especially in the poorer countries of Europe, whether all flesh from tuberculous animals is unfit for human food. It is argued there that if it can be shown that in the majority of cases of tuberculosis the bones and the muscular system are free from infection, there is no reason why the meat should not be put on sale under certain restrictions. The question may be resolved into two divisions: (1) How frequently does the disease invade those parts of the body which are used as food? (2) When the disease process is manifestly restricted to the internal organs do tubercle bacilli circulate in the blood and lymph? and can they be detected in the muscular tissue?

(1) Disease of the bones is not unknown, although very rare. Accoding to Walley it appears chiefly in the spongy bones of the head and backbone and in the long bones of the limbs. Occasionally the ends of the bones, where they are covered by the synovial membrane of the joints, are dotted with tubercles. The muscular system itself is very rarely the seat of tubercular deposits, although the lmphatic glands lying near and among the muscles may be not infrequently diseased.

(2) Whether tubercle bacilli are found in muscle juice independent of any tubercular deposits is a question which must be approached experimentally. There is on record a great variety of opinions on this matter, some authorities considering all flesh from tuberculous animals unfit for food, while others hold a contrary view. Experiments have shown that in rare cases the flesh of tuberculous cattle contains a small number of tubercle bacilli. In Germany the flesh of animals in which the disease is just beginning, or in which it is restricted to one or more related organs, is not rejected. When, however, the disease has affected the muscles, or bones, or lymphatic glands situated on or between them, the flesh is condemned as unfit and dangerous. Animals are also rejected in which it is evident, from the general distribution of tubercles throughout the various organs, that the bacilli have been distributed by the blood and may have been carried into the muscular system (generalized tuberculosis).

Concerning the infectious nature of milk secreted by tuberculous cows, authorities have universally agreed that when the udder itself is in the slightest degree involved, the milk possess infectious properties, and is therefor dangerous. Tubercle bacilli have been found in large numbers in the milk and the udder under such circumstances. Unlike other affections of the udder, tuberculosis of this organ does not at once change the appearance and the quality of the milk secreted. Bang states that for at least a month after the disease has appeared the milk is normal in appearance and may be consumed and sold without arousing the suspicion of the owner. There is, therefore, considerable danger involved in this disease, and the necessity for the careful inspection of dairy cows seems more urgent than ever before.

Authorities are, however, not fully agreed as to whether the milk from tuberculous cows in which the udder is apparently not invaded by the disease should be considered dangerous or not. Some are inclined to believe that the milk secreted by healthy udders is never infectious, even when the lungs or other organs are affected; that, in other words, the tubercle bacilli are rarely, if ever, separated from the lesions which they produce, and that the udder itself must be diseased before tubercle bacilli can appear in the milk. Experiments made with the milk of tuberculous cows in which there were no indications of udder disease do not bear out this theory, since authorities still believe that the udder s diseased when the milk is infected, but that the disease escapes observation. However this may be, the fact that the udder may be diseased and the disease not recognizable, simply casts suspicion upon all milk from tuberculous animals. We know that the milk of tuberculous cattle may or may not contain tubercle bacilli when the udder is apparently free from disease. But we have no rapid method of determining whether, in any given case, the milk contains tubercle bacilli or not. Moreover, the bacilli may be absent at one time and present at another in milk from the same cow. When we consider therefore, the extent of tuberculosis and the hidden character of the disease, a certain amount of suspicion rests upon all milk. Fortunately tubercle bacilli are readily destroyed by the temperature of boiling water, and hence both meat and milk are made entirely safe, the former by the various processes of cooking, the latter by boiling for a few moments. Until better means of diagnosis are at hand it is incumbent upon all communities to have dairy cows examined or inspected, at least to the extent of finding out whether the udder shows any signs of disease. If this is detected the affected animal should be killed at once, or else all opportunity for the sale of such milk removed by appropriate measures. The dangers from infected milk might by these means be very materially lessened.

Recently there has been much discussion of the question as whether human and animal tuberculosis are identical diseases and as to the possibility of the tuberculosis of animals being transmitted to man or that of man being transmitted to animals.

The fact that tubercular material from human subjects often failed to produce serious disease in cattle was observed by a number of the earlier investigators who experimented with such virus. It was the experiments and comparative studies of Theobald Smith, however, which attracted special attention to the difference in virolence shown by tubercle bacilli from human and bovine sources when inoculated upon cattle. Smith mentioned also certain morphological and cultural differences in bacilli from these two sources, and in the location and histology of the lesions in cattle produced by such bacilli. He did not conclude, however, that bovine bacilli could not produce disease in the human subject, but said:

"It seems to me that, accepting the clinical evidence on hand, bovine tuberculosis may be transmitted to children when the body is overpowered by large number of bacilli, as in udder tuberculosis, or when certain unknown favorable conditions exist."

Koch, however, in his address at the British Congress on Tuberculosis, went far beyond this and maintained that "human tuberculosis differs from bovine and can not be transmitted to cattle." As to the susceptibility of man to bovine tuberculosis, he said it was not yet absolutely decided, but one was "nevertheless already at liberty to say that, if such susceptibility really exists, the infection of human beings is but a very rare occurrence." He emphasized this view in the following language:

"I should estimate the extent of infection by the milk and flesh of tubercular cattle and the butter made of their milk as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it."

This conclusion was so radically different from the views of most experimenters and so out of harmony with facts which had apparently been demonstrated by others that it at once aroused opposition in the congress, followed by the adoption of dissenting resolutions, and led to numerous investigations in various countries. Koch's conclusions were based upon his failure to produce tuberculosis in cattle and other animals by inoculating them with tubercular material of human origin, and his success in causing progessive and fatal tuberculosis in the same kinds of animals when inoculated with tubercular material of bovine origin. With such positiveness did he hold to the constant and specific difference between the human and bovine bacillus that he promulgated an experimental method of discriminating between them. Speaking of the etiology of intestinal tuberculosis in man, he said:

"Hitherto nobody could decide with certainty in such a case whether the tuberculosis of the intestine was of human or of animal origin. Now we can diagnose them. All that is necessary is to cultivate in pure culture the tubercle bacilli found in the tubercular material, and so ascertain whether they belong to bovine tuberculosis by inoculating cattle with them. For this purpose I recommend subcutaneous injection, which yields quite specially characteristic and convincing results."

These important and comprehensive conclusions followed from a comparatively few experiments upon animals, and apparently no effort had been made to learn to what extent human tubercle bacilli might differ in their virulence for cattle or what grades of virulence there might be among bacilli of bovine origin. Vagedes had already shown that bacilli were sometimes present in human lesions which were as virulent as bovine bacilli, but his work was wholly ignored by Koch.

A considerable number of investigators, including Chauveau, Vagedes, Ravenel, de Schweinitz, Mohler, De Jong, Delepine, Orth, Stenstrom, Fibiger and Jensen, Max Wolff, Nocard, Arloing, Behring, Dean and Todd, Hamilton and Young, the German Tuberculosis Commission and Theobald Smith, have found tubercle bacilli in the bodies of human beings that died of tuberculosis, which proved to have about the same virulence for cattle as had the bacilli from bovine animals affected by the disease.

Kossel, in a preliminary report, stated that the German commission had tested seven cultures of tuberculosis from cattle and hogs—four from cattle and three from hogs. Two of these cultures proved acutely fatal in cattle after eight to nine weeks; four of the cultures likewise produced a generalized tuberculosis, but which certainly had a more chronic course, while one of the cultures caused only an infiltration at the point of inoculation, with some caseous foci in the adjoining prescapular gland and in one of the mediastinal glands, and there was lacking the spreading of the tuberculosis over the entire body, which they were accustomed to see after the injection of cultures of bovine tuberculosis. "Hence," says Kossel, "among bovine tuberculosis bacilli there can also occur differences with regard to virulence."

The German commission also tested 39 different freshly made cultures from tuberculous disease in man. Nineteen of the cultures did not produce the slightest symptoms in cattle; with nine other the cattle exhibited after four months very minute foci in the prescapular glands, which were mostly encapsuled and showed no inclination to progess; with seven other cases there was somewhat more marked disease of the prescapular glands, but it did not go so far as a material spreading of the process to glands next adjoining. There were four cultures, however, which were more virolent and caused generalized tuberculosis in the cattle inoculated with them.

It would appear, therefore, that hereafter everyone must admit that it is impossible always to tell the source of a culture of the tubercle bacillus by its effects when it is inoculated upon cattle. One of the bovine cultures failed to produce generalized tuberculosis in cattle, and some of the human cultures did produce this form of the disease in such animals. Moreover, while some of the human cultures caused no disease at all, others led to the development of minute foci in the prescapular glands, and still others to somewhat more marked disease of these glands. There were, consequently, four degrees of virulence noted in these 39 cultures of bacilli from human sources and three degrees of virulence in the seven cultures from animal sources.

Now, if we accept the views of Koch as to the specific difference between human and bovine tubercle bacilli, and that the human bacilli produce only localized lesions in cattle, while bovine bacilli produce generalized lesions in these animals, must we not conclude that the one nonvirulent bovine culture was in reality of human origin, and that the animal from which it was obtained had been infected from man? That is a logical deduction, but reverses the dictum laid down at London that human tuberculosis is not transmissible to cattle. Again, how are we to explain the human cultures of medium virulence? Are they human bacilli which for some unknown reason, are increasing in virulence and approaching the activity of the bovine bacillus? Or are they really bovine bacilli which have multiplied in the human body until their virulence has become attenuated? In whatever manner these questions are decided it would seem that the finding of the German commission, instead of supporting Koch's views that we can decide with certainty by the inoculation of cattle as to the source of any given bacillus, really show that this method of diagnosis is extremely uncertain in the present condition of our knowledge.

It is definitely admitted that four of the human cultures caused generalized tuberculosis in cattle; but Kossel suggests that it might be possible that the bacilli in cases of human tuberculosis under certain circumstances could likewise attain a very high pathogenic activitity for cattle without being for that reason bovine bacilli. Undoubtedly the German commission is confronting the two horns of the dilemma, either one of which is fatal to the views of Koch as stated with such positiveness at London. If we accept this suggestion thrown out by Kossel, we must conclude that Koch was wrong in his claim that human tuberculosis can not be transmitted to cattle, and thus with one blow we destroy the entire experimental support which he had for his argument before the British Congress on Tuberculosis. And if, on the other hand, we accept the conclusion which follows from the principle laid down by Koch for the discrimination between human and bovine bacilli, and which appears to be favored by Kossel, we must admit that bovine tuberculosis is an extremely important factor in the etiology of human tuberculosis. Of the 39 cases of human tuberculosis tested, four, or over 10 per cent, were virulent for cattle and would be classified as of bovine origin; but these four cases were all found among sixteen cases of tuberculosis in children which the commission investigated; hence it is plain that 25 per cent of the cases tested of tuberculosis in children would by Koch's method be classified as of bovine origin.

In the Bureau of Animal Industry two distinct lines of experiments have been carried on, in order that one might serve as a check against the other. There has been, however, no discrepancy in the results. De Schweinitz, in the Biochmic Division, Bureau of Animal Industry, has isolated nine cultures from human tuberculosis. Two of these were derived from human sputum, three from cases of generalized tuberculosis in adults, and four from cases of generalized tuberculosis in children. By comparing these cultures with a newly isolated virulent culture of bovine tuberculosis, there were found among them two cultures from children which were identical in their cultural and morphological characters with the bovine bacillus. These cultures also killed rabbits and guinea pigs in as short a time as did the bovine bacillus. Hogs which were inoculated subcutaneously with these two cultures from children died of generalized tuberculosis. Two calves weighing over 300 pounds each were inoculated subcutaneously with these virulent human cultures, and as a result developed generalized tuberculosis. A yearling heifer inoculated with one of the cultures showed generalized tuberculosis when killed three months after inoculation. Both the cattle and the hogs had been tested with tuberculin and found to be free from tuberculosis before the inoculations were made. It is important to observe in this connection that two out of four, or 50 per cent, of the cultures obtained from cases of generalized tuberculosis in children proved vrulent for cattle.

Mohler, workng in the Patholigical Division, Bureau of Animal Industry, has obtained three very virulent cultures of tubercle bacilli from the human subject. A goat inoculated subcutaneously with one of these cultures died in thirty-seven days with miliary tuberculosis of the lungs involving the axillary and prescapular glands. This bacillus was obtained from the mesenteric gland of a boy. Of still greater interest is a bacillus insolated by Mohler from human sputum. A goat inoculated subcutaneously with a culture of this germ died in ninety-five days of pulmonary tuberculosis. A cat inoculated in the same manner died in twenty-three days of generalized tuberculosis. A rabbit inoculated with bovine culture for comparison lived ten days longer than the one inoculated with this sputum germ. Mohler also inoculated subcutaneously a one-year-old heifer with a culture derived from the tubercular mesenteric gland of a boy four years of age. This culture was always refractory in its growth under artificial conditions, and the bacilli were short, stubby rods, corresponding in appearance with the bovine type. At the autopsy, held one hundred and twenty-seven days after the inoculation, the general condition was seen to be poor and unthrifty, and large, hard tumors were found at the points of inoculation. On the rigth side the swelling measured 3½ by 5 inches, and the corresponding lymph gland was 2¾ inches long by 1¾ inches in diameter. This gland contained numerous clacareous foci; one of these at the apex was an inch in diameter. The lesions on the left shoulder of the animal were very similar to those found on the right side, but the dimensions of the tumor were slightly less. The lungs presented an irregular mass of tubercular nodules, and seven or eight grape-like nodules were seen on the parietal pleura. Bronchial and mediastinal lymph glands contained numerous tubercular foci, and the pericardium, peritoneum, spleen, and liver were also affected.

In order to throw some light, if possible, upon the morphological constancy of the different types of tubercle bacilli, Mohler has made comparative studies of bacilli from various sources, and which had been passed through various species of animals, by making the cultures upon dog serum after the method described by Theobald Smith. Some important results have been obtained. One culture of human bacilli which had morphological and cultural peculiarities similar to those of the bovine bacillus, and which only produced local lesions in cattle, was passed through a series of five cats. It was then found to be completely changed in its morphological characters, the rods being elongated, slender, more or less beaded, and entirely of the human type. But far from decreasing in virulence, as might be expected from its morphological appearance, this bacillus had so increased in its pathogenic activity that it now produced generalized tuberculosis in a cow. This cow was inoculated subcutaneously in front of each shoulder with 2 c.c. of a salt solution emulsion of the tuberculous omentum of the last cat of the series. The cow rapidly lost flesh, had a temperature of 104°F., with the point of inoculation and adjacent glands greatly swollen. The autopsy revealed generalized tuberculosis, involving the lungs, mediastinal glands, spleen, liver and kidneys. Tubercle bacilli of the bovine type obtained from the mesenteric glands of a sheep, hog, and cow were similarly transformed in their morphological appearance after being passed through a series of cats and recovered on dog serum. These bacilli also increased in virulence, as the last cat in the series invariably succumbed in a shorter time than the first of the series.

These experiments and observations indicate that the types of tubercle bacilli are very inconstant, and that under suitable conditions they readily change both in morphology and in virulence. A similar conclusion was reached by other investigators in working with the avian and piscine types of tubercle bacilli several years ago, and was reasonably to have been expected with the human and bovine type.

It must be plain to all, from these recent developments, that too much has been made of the slight differences in cultural characteristics, in morphology, and in virulence which have been observed in some cases in comparing the human and the bovine bacilli. The observations were interesting, and it was important that they should be followed up until their significance was made entirely clear; but it was almost unpardonable error, from a sanitary point of view, to promulgate sweeping generalizations calculated to arrest and abolish important measures for preventing human tuberculosis before the soundness of these generalizations had been established by a thorough course of experimentation.

When Koch said in the British Congress on Tuberculosis that he should estimate the extent of infection by the milk and flesh of tubercular cattle and the butter made of their milk as hardly greater than that of hereditary transmission, and that he therefore did not deem it advisable to take any measures against it, he went far beyond what was justified by any experiments or observations which he reported, and he did an immense amount of harm, which will be manifested for years to come to those who endeavor to guard the human race from the dangers of animal tuberculosis. The researches which have been alluded to make these dangers more definite and certain than they have appeared before, and sanitarians should therefore most earnestly endeavor to counteract the erroneous and harmful impression which was made by Koch's address at London and his subsequent address at the International Conference on Tuberculosis at Berlin.

DISEASES OF YOUNG CALVES.

SUSPENDED BREATHING.

The moment the circulation through the naval string is stopped the blood of the calf begins to get overcharged with carbon dioxid (CO_2), and unless breathing is speedily established death promptly follows. Fortuneately the desire to breathe, roused by the circulation of the venous blood and the reflex action from the wet and chilling skin, usually at once starts the contractions of the diaphragm and life is insured. Among the obstacles to breathing may be named suffocation before or during birth from compression of the naval cord and the arrest of its circulation; the detachment of the fetal membranes from the womb before the calf is born; a too free communication between the two auricles of the heart (foramen ovale), by which the nonaerated blood has mixed too abundantly with the aerated and induced debility and profound weakness; a condition of ill health and debility of the calf as a result of semistarvation, overwork, or disease of the cow; fainting in such debilitated calf when calving has been difficult and prolonged; the birth of the calf with its head enveloped in the fetal membranes, so that it has been unable to breathe and the presence of tenacious phlegm in the mouth and nose, acting in the same manner.

Besides the importance of proper care and feeding of the cow as a preventive measure, attention should be given at once to relieve the newborn calf of its investing membrane and of any mucus that has collected in mouth and nostrils. Wiping out the nose deeply with a finger or feather excites sneezing, hence to breathing. Blowing into the nose has a similar effect. Sucking the nostril through a tube applied to it is even more effective. Slapping the chest with the palm of the hand or with a towel dipped in cold water, compression and relaxation alternately of the walls of the chest, may start the action, and ammonia or even tobacco smoke blown into the nose may suffice. Every second is precious, however, and if possible the lungs should be dilated by forcibly introducing air from a bellows or from the human lungs. As the air is blown through bellows or a tube the upper end of the windpipe must be pressed back against the gullet, as otherwise the air will go to the stomach. In a large dairy a piece of elastic tube one-third of an inch in bore should be kept at hand for sucking and blowing in such cases.

BLEEDING FROM THE NAVAL.

This may occur in two conditions—when the cord is cut off too close to the naval and left untied and when it tears off at the naval. (Pl. XIV). It may also bleed when torn across naturally, if it is sucked by the dam or another calf. In an animal with little plasticity to its blood it will flow under almost any circumstances. Where any cord is left it is always safe to tie it, and it is only when it is swollen and may possibly contain a loop of the bowel that there is danger in doing so. By pressing upward any bulky contents such danger is avoided. If torn or cut too close to be tied the bleeding may be checked by applying alum copperas, or for a fraction of a second the end of an iron rod at a dull red heat. If much blood has been lost it may be requisite to transfuse several ounces of blood or of a weak common-salt solution into the open umbilical vein.

URINE DISCHARGED THROUGH THE NAVEL (PERSISTENT URACHUS).

Before birth the urine passes from the bladder by a special tube through the navel and navel string into the outer water bag (allantois). (Pl. XII). This closes at birth, and the tube shrinks into a fine cord up open, doubtless because of the long, narrow channel through which the urine must otherwise escape. The urethra, too, is sometimes abnormally narrow, or even closed, in the male. If part of the cord remains tie it and allow the whole to wither up naturally. If the cord has been removed and the tube (urachus), protrudes, discharging the urnie, that alone must be tied. If there is nothing pendent the urachus must be seized, covered by the skin, and, a curved needle being passed through the skin and above the duct, it may be tied along with this skin. A blister of Spanish flies, causing swelling of the skin, will often close the orifice. So with the hot iron. If the urethra of the male is impervious it can rarely be remedied.

INFLAMMATION OF THE URACHUS (NAVEL URINE DUCT).

This may originate in direct mechanical injury to the navel in calving, or shortly after, with or without the lodgment of irritant and septic matter on its lacerated or cut end. The mere contact with healthy urine, hitherto harmless, can now be looked on as becoming suddenly irritating. The affection is usually marked by the presence of redness and swelling at the posterior part of the naval and the escape of urine and a few drops of whitish serous pus from the orifice of the urachus. In those cases in which urine is not discharged a tender swelling, like a thick cord extending upward and backward from the navel into the abdomen, may be identified. The naval enlargement may be considerable, but it is solid, does not gurgle on handling, and can not be done away with by pressing it back into the abdomen, as in a case of hernia.

In cases at first closed the pus may burst out later, coming from the back part of the navel and the swelling extending backward. In other cases whitish pus may pass with the urine by the ordinary channel, showing that it has opened back into the bladder. In other cases the umbilical veins become involved, in which case the swelling extends forward as well as backward. Thus the disease may result in destructive disorders of the liver, lungs, and, above all, of the joints.

The disease may usually be warded off or rendered simply and comparatively harmless by applying antiseptics to the navel string at birth (carbolic acid 1 part, water and glycerin 5 parts each, or wood tar). Later, antiseptics may be freely used (hyposulphite of soda 4 drams, water 1 quart) as an application to the surface and as an injection into the urachus, or even into the bladder if the two still communicate. If they no longer communicate, a stronger injection may be used (tincture of perchlorid of iron 60 drops, alcohol 1 ounce). Several weeks will be required for complete recovery.

ABSCESS OF THE NAVEL.

As the result of irritation at calving or by the withered cord or by licking with the rough tongue of the cow, inflammation may attack the loose connective tissue of the navel to the exclusion of the urachus and veins, and go on to the formation of matter. In this case a firm swelling appears as large as the fist, which softens in the center and may finally burst and discharge. The opening, however, is usually small and may close prematurely, so that abscess after abscess is formed. It is distinguished from hernia by the fact that it can not be returned into the abdomen, and from inflammation of the veins and urachus by the absence of swellings forward and backward along the lines of these canals.

Treatment.—Treatment consists in an early opening of the abscess by a free incision and the injection twice a day of an astringent antiseptic (chlorid of zinc ½ dram, water 1 pint).

INFLAMMATION OF THE NAVEL VEINS (UMBILICAL PHLEBITIS).

In this affection of the navel the inflammation may start directly from mechanical injury, as in either of the two forms just described, but on this are inoculated infective microbes, derived from a retained and putrefying afterbirth, an abortion, a metritis, a fetid discharge from the womb, an unhealthy open sore, a case of erysipelas, from overcrowding, from filthy floor or bedding, or from an offensive accumulation of manure, solid or liquid. As the microbes vary in different cases, given outbreaks will differ materially in their nature. One is erysipelatoid; another purulent infection with the tendency to secondary abscesses in the joints, liver, lungs, etc.; another is due to a septic germ and is associated with fetid discharge from the navel and general putrid blood poisoning. In estimating the causes of the disease we must not omit debility of the calf when the mother has been underfed or badly housed or when either she or the fetus has been diseased.

Symptoms.—The symptoms will vary. With the chain-form germs (streptococci) the navel becomes intensely red, with a very firm, painful swelling, ending abruptly at the edges in sound skin and extending forward along the umbilical veins. The secondary diseases are circumscribed black engorgements (infarctious) or abscesses of the liver, lungs, kidneys, bowels, or other internal organs, and sometimes diseases of the joints.

With the ordinary pus-producing germs (staphylococcus pyogenes aureus and streptoccoccus pyogenes) and local inflammation in the navel causes a hot, painful swelling, which rapidly advances to the formation of matter (pus), and the raw, exposed surface, at first bright red, becomes dark red or black, soft, friable, and pultaceous. If the pus is white, creamy, and comparatively inoffensive in odor, the secondary formations in internal organs and joints are mainly of he same purculent character (secondary abscesses).

If on the other hand, the discharge is very offensive and the pus more serous or watery or bloody, there is reason to suspect the presence of some of the septic bacteria, and the results on the general system are a high fever and softening of the liver and spleen and no tendency to abscesses of the internal organs. Diarrhea is a common symptom, and death ensues early, the blood after death being found unclotted.

Complicated cases are common, and in all alike the umbilical veins usually remain open and can be explored by a probe passed at first upward and the forward toward the liver.

Prevention is sought by applying a lotion of carbolic acid or iodine solution to the navel string at birth, or it may be smeared with common wood tar, which is at once antiseptic and a protective covering against germs. In the absence of either a strong decoction of tea of oak bark may be used.

Local Treatment consists in the application of antiseptics to the surface and their injection into the vein. As a lotion use carbolic acid, 1 ounce in a quart of strong decoction of oak bark, or salicylic acid or salol may be sprinkled on the surface. The interior of the vein should be swabbed out with a probe wrapped around with cotton wool and dipped in boracic or salicylic acid.

If complications have extended to the liver or other internal organs, or the joints, other treatment will be demanded. In acute cases of general infection an early fatal result is to be expected.

PYEMIC AND SEPTICEMIC INFLAMMATION OF JOINTS IN CALVES (JOINT-ILL).

This occurs in young calves within the first months after birth; it persists in the joints when once attacked, and is usually connected with disease of the navel. Rheumatism, on the other hand, rarely occurs in a calf under a month old. It tends to shift from joint to joint and is independent of any navel disease. Rheumatism, again, affects the fibrous structures of the joints, and rarely results in the formation of white matter, while the affection before named attacks the structures outside as well as inside the joints and, above all, the ends of the bones, and tends to the destruction and crumbling of their tissue and even to the formation of open sores, through which the fragile bones are exposed. The microbes from the unhealthy and infected wound in the navel pass into the system through the veins, or lymphatics, and form colonies and local inflammations and abscesses in and around the joints.

Symptoms.—The symptoms are swelling of one or more joints, which are very hot and tender. The calf is stiff and lame, lies down constantly, and cares not to suck. There is very high fever and accelerated breathing and pulse, and there is swelling and purulent discharge (often fetid) from the navel. There may be added symptoms of disease of the liver, lungs, heart, or bowels, on which we need not here delay. The imptorant point is to determine the condition of the navel in all such cases of diseased and swollen joints beginning in the first month of life, and in all cases of general stiffness, for besides the diseases of the internal organs there may be abscesses formed among the muscles of the trunk, though the joints appear sound. Cases of this kind, if they do not speedily die, tend to become emaciated and perish later in a state of weakness and exhaustion.

Prevention.—Prevention must begin with the purity of the buildings and the navel, as noted in the last article.

Treatment.—Treatment is in the main antiseptic. The slighter forms may be painted daily with tincture of iodine; or an ointment of biniodid of mercury (1 dram) and lard (2 ounces) may be rubbed on the affected joints daily until they are blistered. In case of swellings containing matter this may be drawn off through the nozzle of a hypodermic syringe and the following solution injected: Compound tincture of iodine, 1 dram; distilled (or boiled) water, 2 ounces. Internally the calf may take 5 grains quinia twice daily and 15 grains hyposulphite of soda, or 20 grains salicylate of soda three times a day.

UMBILICAL HERNIA (BREACH AT THE NAVEL).

They may exist at a birth from imperfect closure of the muscles around the opening; it may even extend backward for a distance, from the two sides failing to come together. Apart from this, the trouble rarely appears after the calf has been some time on solid food, as the paunch then extends down to the right immediately over the navel,, and thus forms an internal pad, preventing the protrusion of intestine.

Symptoms.—The symptoms of umbilical hernia are a soft swelling at the navel, with contents that usually gurgle on handling, and can be entirely returned into the abdomen by pressure. The diseases of the navel hitherto considered have not gurgling contents and cannot be completely returned into the abdomen. The only exception in the case of the hernia is when the walls of the sac have become greatly thickened; these will, of course, remain as a swelling after the bowel has been returned; and when the protruding bowel has contracted permanent adhesions to the sac it is impossible to return it fully without first severing that connection.

Treatment.—Treatment is not always necessary. A small hernia, like an egg, in a new-born calf, will usually recover of itself as the animal changes its diet to solid food and has the paunch fully developed as an internal pad.

In other cases apply a leather pad of 8 inches square attached around the body by two elastic bands connected with its four corners, and an elastic band passing from its front border to a collar encircling the neck, and two other elastic bands from the neck collar along the two sides of the body to the two bands passing up over the back.

For small hernias nitric acid may be used to destroy the skin and cause such swelling as to close the orifice before the skin is separated. For a mass like a large goose egg one-half ounce of the acid may be rubbed in for three minutes. No more must be applied for fifteen days. For large masses this is inapplicable, and with too much loss of skin the orifice may fail to close and the bowels may escape.

The application of a clamp like those used in castration is a most effective method, but great care must be taken to see that all the contents of the sac are returned so that none may be inclosed in the clamp.

Another most effective resort is to make a saturated solution of common salt, filter and boil it, and when cool inject under the skin (not into the sac) on each side of the hernia a dram of the fluid. A bandage may then be put around the body. In ten hours an enormous swelling will have taken place, pressing back the bowel into the abdomen. When this subsides the wound will have closed.

DROPSY OF THE NAVEL.

A sac formed at the navel, by contained liquid accumulated by reason of sucking by other calves, is unsightly and sometimes injurious. After making sure that it is simply a dropsical collection it may be deeply punctured at various points with a large sized lancet or knfe, fomented with hot water, and then daily treated with a strong decoction of white oak bark.

THE BLUE DISEASE (CYANOSIS).

This appearing in the calf at birth is due to the orifice between the two auricles of the heart (foramen ovale) remaining too open, allowing the nonaerated (venous) blood to mix with the aerated (arterial) blood, and it is beyond the reach of treatment. It is recognized by the blueness of the eyes, nose, mouth, and other mucous membranes, the coldness of the surface, and the extreme sensitiveness to cold.

CONSTIPATION.

At birth the bowels of the calf contain the meconium, a tenacious, gluey, brownish yellow material largely derived from the liver, which must be expelled before they can start their functions normally. The first milk of the cow (colostrum, beestings), rich in albumen and salts, is nature's laxative to expel this now offensive material and should never be withheld from the calf. If, for lack of this, from the dry feeding of the cow, or from any other cause, the calf is costive, straining violently without passage, lying down and rising as in colic, and failing in appetite, no time should be lost in giving relief by an ounce dose of castor oil, assisting its action by injections of soapsuds or oil. Whatever meconium is within reach of the finger should be carefully removed. It is also important to give the cow a sloppy, laxative diet.

INDIGESTION.

This may occur from many different causes, as costiveness; a too liberal supply of milk; milk too rich; the furnishing of the milk of a cow long after calving to a very young calf; allowing a calf to suck the first milk of a cow that has been hunted, driven by road, shipped by rail, or otherwise violently excited; allowing the calf too long time between meals, so that impelled by hunger it quickly overloads and clogs the stomach; feeding from the pail milk that has been held over in unwashed (unscalded) buckets, so that it is fermented and spoiled; feeding the milk of cows kept on unwholesome food; keeping the calves in cold, damp, filthy, or bad-smelling pens; feeding the calves on artificial mixtures containing too much starchy matter; or overfeeding the calves on artificial food that may be appropriate enough in smaller amounts. The licking of hair from themselves or others and its formation into balls in the stomach will cause obstinate indigestion in the calf.

Symptoms.—The symptoms are dullness, indisposition to move, uneasiness, eructations of gas from the stomach, sour breath, entire loss of appetite, lying down and rising as if in pain, fullness of the abdomen, which gives out a drumlike sound when tapped with the fingers. The costiveness may be marked at first, but soon it gives place to diarrhea, by which the offensive matters may be carried off and health restored. In other cases it becomes aggravated, merges into inflammation of the bowels, fever sets in, and the calf gradually sinks.

Prevention.—Prevention consists in avoiding the causes above enumerated or any others that may be detected.

Treatment.—Treatment consists in first clearing away the irritant present in the bowels. For this purpose 1 or 2 ounces of castor oil with 20 drops of laudanum may be given, and if the sour eructations are marked a tablespoonful of limewater or ¼ ounce calcined magnesia may be given and repeated two or three times a day. If the disorder continues after the removal of the irritant, a large tablespoonful of rennet, or 30 grains of pepsin, may be given at each meal along with a teaspoonful of tincture of gentian. Any return of constipation must be treated by injections of warm water and soap, while the persistence of diarrhea must be met as advised under the article following this. In case of the formation of loose hair balls inclosing milk undergoing putrid fermentation temporary benefit may be obtained by giving a tabelespoonful of vegetable charcoal three or four times a day, but the only real remedy for these is to cut open the paunch and extract them. At this early age they may be found in the third or even the fourth stomach; in the adult they are confined to the first two, and are comparatively harmless.

DIARRHEA (SCOURING) IN CALVES (SIMPLE AND CONTAGIOUS).

As stated in the last article, scouring is a common result of indigestion, and at first may be nothing more than an attempt of nature to relieve the stomach and bowels of offensive and irritating contents. As the indigestion persists, however, the fermentation going on in the undigested masses become steadily more complex and active, and what was at first the mere result of irritation or suspended digestion comes to be a genuine contagious disease, in which the organized ferments (bacteria) propagate the affection from animal to animal and from herd to herd. More than once I have seen such epizootic diarrhea start on the headwaters of a creek, and, traveling along that stream, follow the watershed and attack the herds supplied with water from the contaminated channel. In the same way the disease, once started in a cow stable, is liable to persist for years, or until the building has been thoroughly cleansed and disinfected. It may be carried into a healthy stable by the itroduction of a cow brought from an infected stable when she is closely approaching calving. Another method of its introduction is by the purchase of a calf from a herd where the infection exists.

In enumerating the other causes of this disease we may refer to those noted above as inducing indigestion. As a primary consideration, any condition which lowers the vitality or vigor of the calf must be accorded a prominent place among the factors which, apart from contagion, contribute to start the disease *de novo*. Other things being equal the strong, vigorous races are the least predisposed to the malady, and in this respect the compact from the healthy coat, the clear eye, and the bold, active carriage are desirable. Even the color of the hair is not unimportant, as in the same herd I have found a far greater number of victims among the light colors (light yellow, light brown) than among those of a darker tint. This constitutional predisposition to indigestion and diarrhoea is sometimes fostered by too close breeding, without taking due account of the maintenance of a robust constitution, and hence animals that are very much inbred need to be especially observed and cared for unless their inherent vigor has been thoroughly attested.

The surroundings of the calf are powerful influences. Calves kept indoors suffer to a greater extent than those running in the open air and having the invigorating influences of sunshine, pure air, and exercise; but close, crowded, filthy, bad-smelling buildings are especially causative of the complaint. The presence in the air of carbon dioxide, the product of breathing and of the fetid gaseous products of decomposing dung and urine diminish by about one-fourth of their volume the life-giving oxygen, and in the same ratio hinder the aeration of the blood and the maintenance of vigorous health. Worse than this, such fetid gases are usually direct poisons to the animal breathing them; for example, sulphurated hydrogen (hydrogen sulphide 2 SH_2) and various alkaloids (ptomaines) and toxins, neutral poisonous principles produced in the filth fermentations. These lower the general health and stamina, impair digestion, and by leading to the accumulation in stomach and bowels of undigested materials they lay the foundation for offensive fermentations within these organs, and consequent irritation, poisoning, and diarrhea. They further weaken the system so that it can no longer resist and overcome the trouble.

The condition of the nursing cow and her milk is another potent cause of trouble. The food of the cow is important. The influence of this is shown in the following tables:

BECQUESSEL AND VERNOIS.

Character of Feed	Water	Casein and Extractive Matter	Milk Sugar	Butter	Salts
Cows on winter feed—	Parts in 1,000.	Parts in 1,000.	Parts in 1,000.	Parts in 1,000.	Parts in 1,000.
Trefoil or lucern, 12-13 pounds; oat straw, 9-10 pounds; beets 7 pounds water, 2 buckets	871.26	47.81	33.47	42.07	5.34
Cows on summer feed—					
Green trefoil, lucern, maize, barley, grass, 2 buckets water	859.56	54.70	36.38	42.76	6.80
Goat's milk on different feed—					
On straw and trefoil	858.68	47.38	35.47	52.54	5.93
On beets	888.77	33.81	38.02	33.68	5.72
Normal mean	844.90	35.14	36.90	56.87	6.18

In these examples the deterioration of the milk in casein on the less nutritious winter feeding is very marked, although the relative amount of butter remains almost unchanged. In the case of the goat the result is even more striking, the beet diet giving a very large decrease of both casein and butter and an increase of milk sugar.

The following table, condensed from the Iowa Agricultural Experiment Station Bulletin, gives the results in butter and total solids when the same cows were fed on different rations in succession. Each cow was fed a daily ration of 12 pounds corn fodder and 4 pounds clover hay, besides the test diet of (1) 12¼ pounds corn and cob meal, and (2) 10 pounds sugar meal—a product of the glucose manufacture. This special feed was given seven days before the commencement of each test peirod to obviate the effects of transition. The analyses of the special rations are given below:

Constituents	Corn and Cob Meal	Sugar Meal
Moisture	13.37	6.10
Salts	1.43	1.17
Fat	2.81	11.16
Carbohydrates (heat formers)	65.99	52.66
Woody fiber	8.03	8.64
Proteids (flesh formers)	8.37	20.27

The great excess of fat and nitrogenous or flesh-forming principles in the sugar meal is very evident.

Animal	Milk	Fat	Solids	Fat	Soilds	Ratio of Fat to Solids Not Fat
	Lbs.	Per ct.	Per ct.	Lbs.	Lbs.	
Grade Shorthorn cow—						
First period, 21 days, corn and cob meal	631.25	3.43	11.57	21.67	73.02	422.0: 1,000
Second period, 21 days, sugar meal	641.50	4.04	12.53	25.93	83.38	476.2: 1,000
Third period, 21 days, corn and cob meal	559.00	3.22	11.86	17.97	66.32	371.7: 1,000
Grade Shorthorn cow—						
First period, 21 days, corn and cob meal	604.75	3.57	11.95	21.56	72.28	425.1: 1,000
Second period, 21 days, sugar meal	582.00	3.91	12.37	22.74	72.57	456.3: 1,000
Third period, 21 days, corn and cob meal	527.00	3.37	12.05	17.78	63.48	389.1: 1,000
Grade Shorthorn cow—						
First period, 21 days, sugar meal	753.50	3.97	12.43	29.94	93.67	469.8: 1,000
Second period, 21 days, corn and cob meal	601.50	3.15	11.45	18.97	68.89	380.0: 1,000
Third period, 21 days, sugar meal	560.50	3.85	12.16	21.58	68.16	463.3: 1,000
Grade Holstein cow—						
First period, 21 days, sugar meal	487.50	4.15	13.27	20.25	64.69	455.6: 1,000
Second period, 21 days, corn and cob meal	379.00	3.51	12.69	13.30	48.09	382.3: 1,000
Third period, 21 days, sugar meal	374.50	3.72	13.01	13.95	48.74	401.0: 1,000

Here we see in every instance a marked relative increase of the butter, and to a less extent of the other milk solids whenever the sugar meal—rich in fat and albuminoids—was furnished. The opposite theory having been largely taught, it becomes needful to thus sustain the old and well-founded belief of the dairymen.

Not only does the richness of the milk vary with the nature of the food, but it varies also according to the time of the day when it is drawn, the morning milk giving 7½ per cent of cream and the evening milk 9½ per cent (Hassall). Boedecker found that the morning milk had 10 per cent of solids, while the evening milk had 13 per cent. Again, the milk first drawn at any milking is always poorer than the last drawn. The first may have only one-half, or in extreme cases one-fourth, the cream of the last. Once more, when the cow is in heat the milk becomes richer in solids (casein and butter), and contains granular and white blood cells like the colostrum, and often disagrees with the young animal living on it. Now, while these various modifications in the amount of solid matters may prove harmless to a strong and vigorous calf, they can easily be the occasion of intestinal disorder in a weaker one, or in one with health already somewhat impaired by sickness, exposure, or unwholesome buildings. The casein of the cow's milk coagulates in one solid mass, and is much less easily penetrated by the digesting fluids than the fine flaky coagula of woman's or mare's milk. An excess of casein, therefore, thrown on an already overtaxed stomach can all the more readily induce disorder. So with butter fat. While a most important element in nutrition, it may be present in the stomach in such amount as to interfere with the action of the gastric juice on the casein, and with the interruption of the natural stomach digestion the fats themselves undergo decomposition with the production of offensive and irritating fatty acids.

The milk of the very young cow is usually more watery than that of the mature animal, and that of the old cow has a greater liability to become acid. It varies much with the breed, the Channel Island cattle being notorious for the relatively large amount of cream, while the Holsteins, Ayrshires, and Shorthorns are remarkable rather for the amount of casein. The milk cows fed on potatoes and grass is very poor and watery; that from cows fed on cabbage or Swedish turnips has a disagreeable taste and odor (from the former an offensive liquid has been distilled).

Cows fed on overkept, fermented, and soured rations have acid milk which readily turn and coagulates. Thus old, long-kept brewer's grains, swill, the refuse of glucose factories, and ensilage which has been put up too green, all act in this way. The same may come from disease in the cow's udder, or any general disease of the cow with attendant fever, and in all such cases the tendency is to rapid change and unwholesomeness. If the milk is drawn and fed from a pail there is the added danger of all sorts of poisonous ferments getting into it and multiplying; it may be from the imperfect cleansing and scalding of the pail; from rinsing the pails with water that is impure; from the entrance of bacterial ferments floating in the filthy atmosphere of the stable, or from the entrance of the volatile chemical products of fermentation.

In addition to the dangers coming through the milk, the calf suffers in its digestive powers from any temporary illness, and among others from the excitement attendant on the cutting of teeth, and impaired digestion means fermentations in the undigested masses and the excessive production of poisonous ptomaines and toxins.

Whatever may be the starting or predisposing cause of this malady, when once established it is liable to perpetuate itself by contagion and to prove a veritable plague in a herd or a district.

Symptoms.—The symptoms of diarrhoea may appear so promptly after birth as to lead to the idea that the cause already existed in the body of the calf, and it usually shows itself before the end of the second week. It may be preceded by constipation, as in retained meconium, or by fetid eructations and colicky pains, as in acute indigestion. The tail is stained by the liquid dejections, which are at first simply soft and mixed with mucus with a sour odor, accompained by a peculiar and characteristic fetor (suggesting rotten cheese), which continually grows worse. The amount of water and mucus steadily increases, the normal predominance of fatty matters becoming modified by the presence of a considerable amount of undigested casein, which is not present in the healthy feces, and in acute cases death may result in one or two days from the combined drain on the system and the poisoning by the absorbed products of the decomposition in the stomach and bowels. When the case is prolonged the passages, at first five or six per day, increase to fifteen or twenty, and pass with more and more straining, so that they are projected from the animal in a liquid stream. The color of the feces, at first yellow, becomes a lighter grayish yellow or a dirty white (hence the name white scour), and the fetor becomes intolerable.

At first the calf retains its appetite, but as the severity of the disease increases the animal shows less and less disposition to suck, and has lost all vivacity, lying dull and listless, and, when raised, walking weakly and unsteadily. Flesh is lost rapidly, the hair stands erect, the skin gets dry and scurfy, the nose is dry and hot, or this condition alternates with a moist and cool one. By this time the mouth and skin, as well as the breath and dung, exhale the peculiar penetrating sour, offensive odor, and the poor calf has become an object of disgust to all that approach it. At first, and unless inflammation of the stomach and bowels supervene (and unless the affection has started in indigestion and colic), the belly is not bloated or painful on pressure, symptoms of acute colicky pains are absent, and the bowels do not rumble, neither are bubbles of gas mingled with the feces. The irritant products of the intestinal fermentations may, however, irritate and excoriate the skin around the anus, which becomes red, raw, and broken out in sores for some distance. Similarly, the rectum, exposed by reason of the relaxed condition of the anus, or temporarily in straining to pass the liquid dejection, is of a more or less deep red; and it may be ulcerated. Fever, with rapid pulse and increased breathing and temperature, usually comes on with the very fetid character of the feces and is more pronounced as the bowels become inflamed, the abdomen sore to the touch and tucked up, and the feces more watery, and even mixed with blood.

Prevention.—The prevention of these cases is the prevention of constipation and indigestion, with all their varied causes as above enumerated, the selection of a strong, vigorous stock, and, above all, the combating of contagion, especially in the separation of the sick from the healthy, and in the thorough purification and disinfection of the buildings. The cleansing and sweetening of all drains, the removal of dung heaps, and the washing and scraping of floors and walls, followed by a liberal application of chlorid of lime (bleaching powder), 4 ounces to the gallon, are indicated. Great care must be exercised in the feeding of the cow to have sound and wholesome food and water, so apportioned as to make the milk neither too rich nor too poor, and to her health, so that the calf may be saved from the evil consequences of poisonous principles that may be produced in the body of the cow. The calves should be carefuly kept apart from all calving cows, and their discharges. Similarly, each calf must have special attention to see that its nurse gives milk which agrees with it, and that this is furnished at suitable times. If allowed to suck, it should either be left with the cow or it may be fed three times a day. If it becomes hungry twice a day it is more likely to overload and derange the stomach, and if left too long hungry it is tempted to take in unsuitable and unwholesome food, for which its stomach is as yet unprepared. So, if fed from the pail, it is safer to do so three times daily than twice. The utmost cleanliness of feeding dishes should be secured and the feeder must be ever on the alert to prevent the strong and hungry from drinking the milk of the weaker in adition to their own. In case the cow nurse has been subjected to any great excitement by reason of travel, hunting or carrying, the first milk she yields thereafter should be used for some other purpose and only the second allowed to the calf. Indeed, one and all of the conditions above indicated as causes should be judiciously guarded against.

Treatment.—Treatment will vary according to the nature and stage of the disease. When the disease is not widespread, but isolated cases only occur, it may be assumed to be a simple diarrhoea and is easily dealt with. The first object is to remove the irritant matter from stomach and bowels, and for this 1 or 2 ounces of castor oil may be given, according to the size of the calf. Reduce the milk by one-half or twothirds. If the stools smell particularly sour, it may be replaced by 1 ounce calcined magnesia, and in any case a tablespoonful or two of lime water must be given with each meal. Great harm is often done by giving opium and astringents at the outset. These merely serve to bind up the bowels and retain the irritant source of the trouble; literally, "to shut up the wolf in the sheep-fold." When the offending agents have been expelled in this way carminatives and demulcent agents may be given: 1 dram anise water, 1 dram nitrate of bismuth, and 1 dram gum arabic, three times aday. Under such a course the consistency of the stools should increase until in a day or two they become natural.

If, however, the outbreak is more general and evidently the result of contagion, the first consideration is to remove all sources of such contamination. Test the milk of the cow with blue litmus paper, and, if it reddens, reject the milk of that cow until by sound, dry feeding, with perhaps a course of hyposulphite of soda and gentian root, her milk shall have been made alkaline. The castor oil or magnesia will still be demanded to clear away the (now infecting) irritants, but they should be combined with antiseptics, and, while the lime water and the carminative mixture may still be used, a most valuable addition will be found in the following: Calomel, 10 grains; prepared chalk, 1 ounce; creosote, 1 teaspoonful; mix, divide into ten parts, and give one four times a day. Or the following may be given four times a day: One dram Dover's powder, 6 grains powdered ipecacuanha; mix, divide into ten equal parts. Injections of solutions of gum arabic are often useful, and if the anus is red and excoriated, one-half dram of copperas may be added to each pint of the gummy solution. All the milk given must be boiled, and if that does not agree, eggs made into an emulsion with barley water may be substituted. Small doeses (tablespoonful) of port wine are often useful from the first, and as the feces lose their watery character and becomes more consistent, tincture of gentian in does of 2 teaspoonfuls may be given three or four times a day. Counterirritants, such as mustard, ammonia, or oil of turpentine, may be rubbed on the abdomen when that becomes tender to the touch.

ACUTE CONTAGIOUS SCOURING IN THE NEWBORN.

The most violent and deadly form of diarrhoea in the newborn calf deserves a special mention. This may appear immediately after birth, and shows itself almost invariably within the first or second day. The most intense symptoms of white scour are complicated by great dullness, weakness, and prostration, sunken eyes, retracted belly, short, hurried breathing, and very low temperature, the calf lying on its side, with the head resting on the ground, lethargic and unconscious or regardless of all around it. The bowel discharges are profuse, yellowish white, and very offensive. As a rule, death ensues within twenty-four to thirty-six hours.

A marked characteristic of this form of illness is that it attacks almost every calf born in the herd, or in the building, rather, and if the calf escapes an attack in the first two or three days of its life it usually survives. Those that recover from an attack, however, are liable to suffer from an infective inflammation of the lungs one or two weeks later. The infection clings to a stable for years, rendering it impossible in many cases to preserve and raise the calves. It has frequently coincided with abortions and failures to conceive in the same herd, so that it has been though that the same infective germ produces one type of abortion. On the other hand, the removal of the calving cow from the herd to calve in a separate building, hitherto unused and therefore uninfected, usually secures the escape and survival of the offspring.

The disease has been traced by Nocard and Lignieres to a small bacillus having the general characters of those which produce hemorrhagic septicemia, which is usually combined with a variety of others, but is in some cases alone and in pure culture, especially in the joints. The theory of Lignieres is that this bacillus is the primary offender, and that once introduced it so depresses the vital powers of the system and tissue cells that the healthy resistance to other bacteria is impaired or suspended, and hence the general and deadly invasion of the latter.

Inoculations with this bacillus killed guinea pigs or rabbits in six to eighteen hours, and calves in thirty hours, with symptoms and lesons of hermorrhagic septicemia, including profuse fetid diarrhoea.

The predominance of the early and deadly lesions in the alimentary tract would seem to imply infection through the food, and the promptitude of the attack after birth, together with the frequent coincidence of contagious abortion in the herd, suggest the presence of the germ in the cow; yet the escape of the calf when the cow calves in a fresh building is equally suggestive of the infection through germs laid up in the building. This conclusion is further sustained by the observaton that the bacillus evidently enters by the raw, unhealed navel, that it is diffused in the blood, and that a very careful preservation of the navel against infection gives immunity from attack.

Prevention.—The disease is so certainly and speedily fatal that it is hopeless to expect recovery, and therefore prevention is the rational resort.

When a herd is small, the removal of the dam to a clean, unused stable a few days before calving and her retention there for a week usually succeeds. But it is in the large herd that the disease is mainly to be dreaded, and in this it is impossible to furnish new and pure stables for each successive group of two or three calving cows. The thorough disinfection of the general stable ought to succeed; yet I have seen the cleanest and purest stable repeatedly disinfected with corrosive sublimate without stopping the malady. It would appear as if the germ lodged on the surface or in the bowels of the cow and tided the infection over the period of stable disinfection. But though insufficient of themselves, the supply of separate calving boxes and the frequent thorough cleaning and disinfection of both these and the stables should not be neglected. The most important measure, however, is the disinfection of the navel.

The cow should be furnished with abundance of dry, clean bedding, sprinkled with a solution of carbolic acid. As soon as calving sets in the tail and hips, anus and vulva, should be sponged with a carbolic acid solution (one-half ounce to the quart), and the vagina injected with a weaker solution (2 drams to the quart). Fresh carbolized bedding should be constantly supplied, so that the calf shall be dropped on that and not on soaked litter nor manure. The navel string should be at once tied with a cord that has been taken from a strong solution of carbolic acid. The stump of the cord and the adjacent skin should then be washed with the following solution: Iodin, one-half dram; iodid of potassium, one-half dram; water, 1 quart. When dry, it may be covered with a coating of collodion of tar, each containing 1 per cent of iodin.

Whenever a calf shows any sign of scouring, it should be instantly removed to another pen and building, and the vacated one should be thoroughly cleaned and disinfected. Different attendants should take care of the sound calves and infected ones, and all utensils, litter, etc., kept scrupulously apart.

After one week the healthy calves may usually be safely herded together or they may be safely placed in the cow stable.

OTHER AILMENTS OF THE CALF.

Among these may be named several congenital imperfections, such as imperforate anus, vulva, or prepuce, which are to be recognized by the inibility to pass dung or urine, in spite of straining, and the formation of swellings in the anus, vulva, or sheath. Each must be carefully incised with the knife, taking care not to injure the muscles which circumscribe the respective openings. Also tongue-tie, in which the thin flaccid mucous membrane passing from the median line of the lower surface of the tongue binds the latter too closely to the floor of the mouth and renders the tongue unfit for gathering in the food in after life. This must be cut with knife or scissors, so as to give the tongue a reasonable amount of liberty.

Aphtha, or thrush, is another trouble of the sucking calf, showing itself as a white, curdy elevation on the tongue, lips, cheeks, or gums, and when detached leaving a raw, red, angry surface. It is due to the growth of a vegetable parasite long recognized as the Oidium abicans (Saccharomyces albicans). It is easily removed by rubbing with powdered borax, but inasmuch as other colonies are likely to start either in the mouth or lower down in the pharynx, gullet, or stomach, it is well to give a dose of one-half dram of hyposulphite of soda in water day by day for several days.

Rickets is not a common disease in calves, and come on, if at all, later than those we have been considering. It consists in softening and friability of the bones from a deficiency of lime salts, and appears to be mainly connected with an inherited weakness of constitution, unsuitable feeding, cold, close, damp buildings, microbian infection, and other conditions inimical to health. The preventon and treatment of rickets consists essentially in the improvement of the digestion and general health; hence sunshine, open air, exercise, nourishing food and tonics are indicated.

PART XI.

IOWA STATE FAIR AND EXPOSITION, 1908.

Press Reports and Live Stock Awards.

Results in Boys' Judging and Girls' Cooking Contest. Awards in the Corn Show at the State Farmers' Institute Meeting December, 1908.

PRESS REPORTS.

Wallaces' Farmer, Des Moines, Iowa.

Secretary of Agriculture James Wilson probably would not lay claim to being a judge of what constitutes a good "horse-trot" fair, but when it comes to an agricultural exposition it will be generally conceded that he knows what he is talking about. In the course of his address on the state fair grounds last week he said: "I spent yesterday going over the fair and visited all of the different departments, and I want to say to you Iowa folks that it is the greatest live stock and agricultural exposition in the United States and that, of course, means the world as well. Nowhere in the entire country can be found such a display of agricultural resources, while the live stock exhibit is even greater than most of the special live stock expositions, and the people who come to the fair are the most successful farmers in the world and live in the most fertile agricultural section of the world."

Secretary Wilson was absolutely right. He made his statement none too strong. For the past five or six years we have been obliged to begin our report of the Iowa State Fair with the statement that it excelled all previous expositions. Each year we have cast around for some new way of telling the same old story. But what is one to do? The bald statement that this year's fair has never been approached by any previously held in Iowa or in any other state tells it all, and no quantity of rhetorical flourishes or literary ornamentations will add anything to the fact.

The directors did a wise thing when they set the opening of the fair two days ahead, opening it Wednesday instead of Friday as has heretofore been the custom. These two days—every minute of them—were needed by the exhibitors to prepare for the crowd which came later. During the past two or three years there has been quite a sentiment in favor of a two week's fair. We have not thought the time had come for that, but as the number of permanent buildings increases and the fair becomes more independent of the weather, the sentiment for a longer fair will undoubtedly grow. The addition of some agricultural short course features would help make a longer stay desirable. Who knows but some time in the future our state fair may develop into a month's exposition.

When representatives from the various state fairs, and from the commercial clubs and business interests of the different cities went to Chicago about a month or six weeks ago and met with the officers of the Western Passenger Association, they told these gentlemen of the railroads that the conditions were right this year for a great state fair if the railroad people would do their part and put in the old rate of three cents per mile for the round trip. These gentlemen pointed out the necessity of having successful fairs in the west this year and the influence this would have on the business conditions of the country generally. Some of the railroad people were inclined to be skeptical on this point, but after considering the matter carefully they conceded to the wishes of the western folks and granted the rate of three cents a mile for the round trip. If there remains any doubt in their minds as to the wisdom of granting this rate it can very quickly be put aside by consulting their passenger receipts to Des Moines last week. While the official figures can not yet be obtained, it is estimated that over 200,000 people came to the state fair. The attendance each day exceeded that of the same day last year. On Monday of last week for example, the gate receipts alone at Des Moines were $15,015.40, while for the corresponding Monday in 1907 they were but $7,279.80; on Tuesday this year, $26,181.85, as compared with $19,081.55 last year; on Wednesday $24,470.35, as compared with $21,348.75 last year; on Thursday, $18,279.10, as compared with $12,862.90 for the same day in 1907. Up to Thursday night the total receipts of the fair amounted to $116,911.00, as compared with $83,164.00 for up to the same date last year. When the total receipts for the entire fair are figured up carefully they will be found to run from $125,000 to $130,000, and after all expenses are deducted it is probable that the profits will run from $30,000 to $50,000, which will be used to further improve the grounds and buildings.

If anyone wants to know whether Iowa folks are suffering from the financial flurry of last winter he ought to be able to find a sufficiently definite answer in the foregoing record of attendance. If Iowa was in the dumps financially we would not have had a record-breaking attendance at the state fair. The Iowa farmer is thrifty and frugal. He comes to the state fair because of its educational value and does not begrudge the money spent in this way; but when times are hard with him and money not as plentiful as usual he does not spend it on trips of this sort. If our eastern friends know how to read the signs of the great agricultural country of the central west they will cheer up when they hear of the record-breaking success of the Iowa State Fair. It should be a good luck sign to them. If the attendance this year had fallen below last year conservative men would have regarded it as a warning to move cautiously. We may have financial troubles in different sections, but the real prosperity of the country depends upon the farmer, and as long as he feels comfortable over the situation there is no reason for general alarm. The attendance at the Iowa State Fair is a good financial barometer.

The principal event of Wednesday was the visit of Secretary of Agriculture Wilson and his address before a very large audience. We can not publish this address for the reason that Secretary Wilson had not reduced it to manuscript. He dealt with agricultural matters entirely. He told something of the work that is being done by his department. Speaking of the fertility of our farm lands, he said that some time since one of the industrial commissions appointed by the president had asked the Department of Agriculture for statistics on this subject, and to get at the facts he had some of the department staff make a careful investigation into the yield of crops for the past forty years. He said that this investigation showed very clearly that while there had been some variations, yet the last ten years of the forty had given larger yields per acre than any other ten-year period. He did not know of any other way to answer the question as to the fertility of our land better than by the yield of crops per acre. He said there is no need of the Iowa farmer bothering his head about commercial fertilizers if he will simply follow the common sense of rotation. Grow grass, pasture it, plow it up and grow corn, feed the corn, stalks and all, to the live stock on the farm, return the manure to the land—that is the secret of keeping up the fertility and increasing the crop yield. On his own farm in Tama county crops had never yielded so well as during recent years. The land is increasing in fertility instead of deteriorating. An acre of corn fodder is worth as much as stock feed as an acre of timothy hay. Don't grow the timothy hay at all. Cut up the corn, husk out the ears and feed the fodder. The farmers of Iowa are losing $40,000,000 a year in not saving their corn fodder. Of course, they can stand it if anyone can. But if the time comes when they want to make a little extra money, just save the corn fodder.

On the subject of tuberculosis he said that it was becoming more and more serious. Some European countries were now asking that the Department of Agriculture certify that the meat sent to them is from animals which had not been affected with tuberculosis. Meat inspection in the United States is more rigid than in any other country in the world. All meat which is unfit for food is condemned, but now some of our European customers are insisting that the department certify that there were no traces of tuberculosis in any part of the animal. This means trouble. Secretary Wilson said it was time for the American farmer to eradicate this disease. He can do it if he wants to. The tuberculin test will enable him to locate it in the cattle and get rid of the diseased ones. If the disease is stamped out in the cattle there will be no bother with the hogs.

Referring to agricultural education, he said that there was a greater demand for our young men who understood agricultural matters than in any other profession or business. The trouble is in finding the young men who can do things and then keeping them at home. One of the greatest difficulties he met with in his department was to keep the bright young men; as soon as they demonstrated their ability some of the foreign governments or large land holders offer them more money than the department will pay and take them away. The demand from the agricultural colleges for qualified men is far in excess of the supply.

Secretary Wilson urged Iowa farmers to tile all the wet land. He said he thought the yield could be increased 25 per cent by proper tiling where needed. He had in mind not only lands which are now too wet to farm at all but lands which are under cultivation but cold in the spring, making it necessary to defer planting until late in the season. Tiling will warm the soil, make it easier to work and hasten the maturity of the crop. Iowa farmers who have money to invest can invest it to no better purpose than in tiling such fields as would be benefited by it.

Speaking of the fair, the secretary said that he had but one word of criticism to offer. It excelled all other fairs of this sort in the United States, and that meant in the entire world. But he suggested that there was one department which was not receiving the attention it deserved. The poultry industry is greater than the wheat industry or than the cotton industry. It was not right that there should be such a light display of poultry. The directors of the fair were men who knew their business, and he felt sure that all that was necessary was to direct their attention to this fact and to suggest that instead of offering $2 as first premiums for the exhibits in the poultry department they increase it to $10, or even $25, and thus encourage a display in keeping with the importance of the industry. The poultry exhibit at the Iowa State Fair ought to be as great in its field as the cattle exhibit or the horse exhibit or the hog exhibit

The secretary concluded his address with an appeal to the farmers of Iowa to continue the good work of agricultural education; to instill in their boys a desire for real agricultural knowledge; to study nature as well as books; to stand by the agricultural institutions of the state, the short courses, the farmers' institutes, the state and county fairs; to train them up as God-fearing, man-loving, bible-reading young men fit to receive and preserve for their posterity the richest agricultural area on the face of the earth.

Secretary Wilson was preceded by Judge Deemer, to whom very much of the credit of the Red Oak short course is due. Governor Cummins introduced the secretary in his usually felicitous manner.

Each year at least one new permanent building is erected. This year it was an administration building, in which are housed all of the administration offices. Heretofore these offices have been scattered over the grounds in small buildings, to the annoyance and discomfort not only of the officers but of those who wished to transact business with them. The new building is of brick with wide verandas on all sdes, and a large rotunda in the center, the offices surrounding it. The building is well built, of pleasing architecture, and admirably suited to the purpose for which it was designed. In addition to this building another brick horse barn was built on short notice in the effort to take care of the demand for space by clamorous exhibitors. With the profits of this year's fair the directors will find it possible to still further increase the number of substantial barns, and thus gradually do away with the flimsy old structures which were all right for their time but which seem singularly out of place now.

The appropriation by the legislature of funds to build a commodious fire-proof grand stand should be no longer delayed. The need is urgent; more so than for anything else than can be asked. Iowa can not afford to risk the lives of so many of her best citizens in the present inflammable old grand stand. It might be used for years without accident, but there is the ever present danger of a catastrophe which would kill and maim hundreds and perhaps thousands. The legislature this winter should appropriate ample funds for a concerete and steel structure large enough to take care of the greatest crowds that come, and it should be ready for the fair of 1909. Let us delay this matter no longer. Iowa does not want a fire or stampede horror.

THE IOWA STOCK SHOW BREAKS ALL RECORDS.

The Iowa State Fair has held the record for state fair stock shows for a number of years, but no other Iowa fair has ever approached in numbers and quality the exhibit of this year. It established a new record for state fair shows, a record, too, which few live stock shows ever held in this country has surpassed. Indeed, not since the World's Fair at St. Louis has there been so great a lot of cattle, horses, sheep, and hogs of all the breeds gathered together at one place. It was a well rounded out, finished show, with quality a conspicuous feature. It opened most auspiciously the show season of the year and surprised even the most optimistic by its strength and quality. Not only were the exhibits a record breaker, but no exposition ever had a more appreciative or intelligent audience, farmers from all over Iowa, and from other states as well, being interested students of the judging, the attendance being greater than in any previous year. Both the exhibits and the interest they created were a fitting tribute to Iowa's rank as a live stock state, and what more fitting than that Iowa, the greatest live stock state in the union, should have the greatest show? Nothing is too good for the Iowa farmer, and gratifying it is to note that much of the excellence of the exhibit was due to the Iowa farmer's skill and intelligence in breeding and feeding.

Iowa exhibtors were more strongly in evidence than they have ever been before, and made an excellent showing. Our predictions in commenting upon the show last year "That the breeders will arise to the emergency and that future shows may even yet surpass the great show of 1907" was fulfilled this year, and this prediction will probably hold good for another year, as there seems to be no limit to the growth of the Iowa State Fair. Iowa breeders have done well, but they can do better.

THE HORSE SHOW.

This year's horse show was a big one, surpassing anything that has been seen at Des Moines for many years. From many viewpoints its general appearance was not unlike the International horse show with horses from the very best studs of Europe and America on exhibtion, and they were presented in their very best form and furnished a great opportunity for the student to make comparisons and study. The aged classes of stallions and mares were well filled, but the younger classes were light, with only a few entries in each ring. It was evident, however, that the show had outgrown the space provided for it in the pavilion, as it was nearly impossible to find space to move the horses for the inspection of the judges. Iowa furnished at least half of the draft horses, with Illinois, Wisconsin, and Minnesota contributing the balance.

The light harness classes were lightly filled, as were the saddle classes, but there were a few very stylish fancy pairs that were high class and very attractive, and the high school saddlers made a fine show and did much to entertain the crowds.

THE PERCHERONS.

In numbers this breed surpassed all other draft breeds. It was truly a fine display of the French horse through all the classes. Some excellent mares and fillies were shown and many of them were home-grown, being products of Iowa, and is very suggestive of what might be accomplished if farmers would pay more attention to the horse breeding industry. The exhibitors in this class well deserve the plaudits which they received, for they made one of the best Percheron shows that Iowa folks have ever seen. Twenty-two stallions lined up in the fouryear-old class before Judges Alex Galbraith and Professor Kennedy, who placed the awards for the breed in all the regular and special classes. It was a splendid show for the breed and filled more than one side of the large ring in the pavilion. To place the awards was no easy task and consumed considerable time, and when done one could select quite a number of splendid stallions that were outside the money. Eighteen head were shown in the three-year-old class, and they made a fine show. But the two-year-old stallion class consisted of thirty head, which was the largest ring of the entire show and contained many fine specimens of the breed. They were noted for their weight and quality.

CLYDESDALES.

While this breed made the lightest show in numbers, it equaled any of the others in high class quality and merit. It consisted of choicely selected imported and American-bred stallions, the very best that can be found. A pleasing feature of this class was the high class American-bred horses that were shown, as the judge found some that in his opinion were superior to imported ones. The exhibitors who made this show were John Leitch, of Lafayette, Ill.; Alex Galbraith, of Janesville, Wis.; and W. V. Hixon, of Marengo, Iowa. Wm. Pritchard placed the awards.

BELGIANS.

This breed put up the best show ever seen in Iowa or at any state fair, and suggests the advance which this heavy breed is making. The aged and three-year-old stallion classes made a very high class show. They were noted for their smoothness, quality, and weight, and it was very apparent that they received their full share of attention. Robert Ogilvie placed the awards.

THE SHIRES.

This breed made the best show for the breed that was ever made at the Iowa State Fair. It had much breed character, weight, and quality, and contained many horses of great value. The principal exhibitors were Trumans' Pioneer Stud Farm, Bushnell, Ill.; Wm. Crownover, Hudson, Iowa; A. G. Soderberg, Osco, Ill.; Taylor & Jones, Williamsville, Ill.; Watson & Wood Bros. and Kelley, Lincoln, Neb.; Finch Bros., Joliet, Ill.; and Robt. Burgess & Son, of Wenona, Ill. Trumans' imported gray Shire mares were a special attraction for this breed. Our readers who were fortunate enough to see this great show of stallions and mares can say it was the greatest that was ever made in America. Wm. Pritchard, of Ottawa, Illinois, had the difficult task of placing the awards.

DRAFT GELDINGS AND MARES.

This show brought out quite good entries. In the aged class first and second went to Burgess, third to L. Dunbar, fourth to J. W. Jarvis. In the three-year-old class first and third went to Finch Bros. and second to Irvine. In the two-yearold class first went to Jarvis, second to W. W. Miller, third and fourth to Henry Lefebure. In the gelding or mare one-year-old class A. G. Soderberg

SADDLERS.

The display of saddle horses was light, Thomas Bass, of Mexico, Mo.; Chas. D. Judy, of Tallula, Ill.; T. C. Evans, of Paola, Kan.; Adam Sterling, of Des Moines, Iowa; Chas. Glover, of Springfield, Ill.; and C. E. Monahan, of Des Moines, Iowa, comprising the entries. Mr. Bass won first in the four-year-old and three-year-old stallion classes, and also in the two-year-old stallion and three-year-old mare classes, and champion stallion. Mr. Judy won first in the four-year-old stallion class and in the four-year-old mare class. While not large in numbers, the exhibit was of excellent quality and attracted much attention.

HARNESS HORSES.

There were not as many horses shown in harness as usual this year, but the entries were of excellent quality, the Pabst Stock Farm bringing out some exceptionally well conditioned and stylish entries, winning first on matched heavy carriage or coach team, first on single mare or gelding, and first on tandem team. Charles C. Judy, Tallula, Ill.; T. C. Evans, Paola, Kan.; Shaw Bros., Mitchellville, Iowa; and C. E. Monahan, Des Moines, Iowa, were the other exhibtors.

FRENCH AND GERMAN COACH.

The display of French and German Coach horses was light this year, Singmaster Bros. having the only entries with the exception of the Taylor & Jones entry in the two-year-old stallion class, the only one in that class.

STANDARD BRED AND ROAD HORSES.

While not so many horses were exhibited in harness in these classes this year, yet there were many entries in the younger classes, the management having offered considerable encouragement to breeders of Morgan horses and American carriage horses.

MORGANS.

Morgans were shown by P. F. Smith, Montezuma, Iowa; C. T. Ayres, Osceola, Iowa; S. B. Mills, Ames, Iowa; and Alex Dallas, Atlantic, Iowa. The former won first in the three-year-old stallion, yearling stallion, and get of stallion classes. Mr. Mills won first in horse and mare foal, first, second and third in mare three years old and over, and first in grand display of five animals bred by exhibtor. Mr. Ayres won third in the aged stallion class and Dallas second. Geo. M. Rommel, of the Department of Agriculture, Washington, D. C., made the awards.

HACKNEYS.

Quite a good showing of Hackneys were on the grounds, the Pabst Stock Farm, of Milwaukee, Wisconsin, and Truman's Pioneer Stud Farm, having some especially choice entries, as did also Chas. E. Bunn, of Peoria, Ill. Henry Lefebure, of Fairfax, Iowa, had one or two entries, and John Tate, of Nevada, Iowa, several entries. Pabst Stock Farm won first in the aged stallion, two-year-old stallion, two-year-old and yearling filly, and the best five animals owned by exhibitor classes.

Truman's Pioneer Stud Farm won second in both the aged and two-year-old stallion classes, the strongest of the show. Mr. Bunn won first in the yearling stallion, aged mare, and produce of mare classes. Mr. Lefebure won second in the aged mare class and Mr. Tate second, third, and fourth in the two-year-old filly class.

STANDARD BRED TROTTERS.

The rings in this class were especially well filled in the older classes, although there were not full entries in the younger classes. James Watt, Des Moines, Iowa, won first in the aged stallion class. E. A. Elliott, of Des Moines, first in the two-year-old stallion class; Winchester Stock Farm first in the two-year-old and yearling stallion classes, also in the two-year-old and three-year-old filly classes, and also get of stallion; L. H. Pickard, of Harlan, Iowa, won first on horse foal. Thos. Bass, of Mexico, Mo., first on four-year-old mare; Mr. Brouhard first on yearling filly; Mr. Bruere first on mare foal. Shaw Bros. won on produce of mare.

AMERICAN CARRIAGE HORSES.

This class brought out a first rate show. Mr. Smith won first on stallion four years old or over, and first on stallion with three of his get; Mr. Elliott won first on three-year-old stallion; Mr. Brouhard first on yearling stallion, yearling mare and mare foal.

SHETLAND PONIES.

There were some splendid ponies on the grounds and they attracted much attention, especially when shown in the pavilion and under harness and saddle. Mr. Bunn won first in all the stallion classes, first in all the mare classes with the exception of mare three years old or over, which went to Charles Parmenter. Mr. Bunn also won all prizes for Shetlands in harness and on stallion and get and grand display. Horace Anderson, of Des Moines, Iowa, won first on pony under saddle.

THE CATTLE SHOW.

THE SHORT-HORNS.

Always strong at the Iowa State Fair, the Short-horn show equaled the record of previous years this season. It was not perhaps any stronger than it has been in previous years, but a show nevertheless that would have done credit to a world's fair or international exposition, and few shows of the year will surpass it in the number and quality of the exhibit. Iowa breeders continued the record they have made in the past two years, bringing out better conditioned cattle and more good cattle than they have ever brought out before, furnishing the outside herds of Elmendorf Farm, F. W. Harding, and D. R. Hanna competition of the most interesting character. While few of the Iowa herds make the show circuit and therefore are not as well conditioned as a rule as the outside herds, yet they always show strong at the Iowa State Fair and give competition in the younger classes in particular that is anything but easy to overcome. The younger classes of the show were particularly strong this year.

King Cumberland ''—Jr. Champion Short Horn Bull, Iowa State Fair and Exposition, 1908

In the bull classes, Whitehall Marshall, last year's champion, leads the aged bulls, but had very close competition in his half brother, Whitehall King, the Harding entry, the latter being an exceptionally smooth bull and making a strong showing. The Iowa bulls also were very strong in this class, it being one of the best aged bull classes that has faced the judges in some time. With the exception of the senior yearling bull class, the other bull classes were very well filled indeed, and the quality of the rings was good. The junior yearling bull class was the banner class of the show, and in King Cumberland, H. H. Powell & Son brought out one of the greatest Short-horn bulls of recent years. Indeed, so strong were this young bull's claims that Captain Robson, of Canada, who judged the Short-horns, could have made him grand champion and it would have met with the approval of many of the best judges of Short-horn cattle at the ringside, King Cumberland having many friends, and making him champion would have been a popular decision. He is a roan bull of beautiful type, exceptionally good in his lines, deep of body, with lots of width, good head and horns, short neck; in short, a show bull from all points. It has been a long time since we have seen a bull that so well fills our eye as this grand young roan. If this bull continues through the circuit it will not be at all surprising if he wears the championship laurels at a number of the shows before the season is over. His claims for recognition are indeed strong.

The female classes of the show were even stronger than the bulls, take it all in all. A wonderfully good cow was brought out in the Hanna entry Flora 90th, who was made champion of the show. The two-year-old, yearling, and heifer calves were also a fine lot, the younger classes being exceptionally strong in both numbers and quality. Iowa had the honor of furnishing the first prize senior heifer calf in the Flynn Farm Company entry Countess F., also the first prize junior calf in Saunders' entry, Susan Cumberland.

THE HEREFORDS.

The Hereford show this year outclassed all previous Iowa shows. In fact, if the Kansas City and International shows are as strong in the Hereford department they will have unusually strong shows. The Hereford exhibitors are to be congratulated on the showing they made at the Iowa State Fair, and it forecasts a successful year for them throughout the circuit. From the aged bull class down through the herd classes there were a large number of entries, and close competition. In the aged bull class there were nine entries. The class was uniformly excellent. Van Natta's Prime Lad 9th won over Cargil & McMilan's Bonnie Brae 3d, reversing last year's placing of these two bulls as two-year-olds. In the junior yearling bull class there were thirteen youngsters shown and Logan won on a remarkably smooth, blocky little fellow. In the aged cow class a strong, uniform lot of thirteen were shown. Cargill & McMillan's Mignonette, last year's grand champion cow at the Iowa fair, won over Van Natta's Pretty Face. Mignonette is of the extreme low, blocky type. She shows very smoothly for an old cow, although a trifle under in weight. In the two-year-old heifers Cargill & McMillan again won first on Miss Filler 2d, who is a beautiful Hereford type in almost every respect. She is a smooth, low-set, broad heifer, but with lots of scale and quality. She was made grand champion cow without much trouble. Both the yearling heifer classes were large, strong classes, and in both Cargill & McMillan won. In the heifer calf classes there was also strong competition. Van Natta won the senior class. In the junior class Logan won first on a trifle small but wonderfully smooth, low-set heifer. When it came to the exhibitor's herd class there was a tight place between Cargill & McMillan and Van Natta. In Van Natta's herd were the grand champion bull and the first prize senior heifer calf. In Cargill & McMillan's herd were the second prize aged bull, the grand champion cow, and two other first prize cows. Van Natta won. Besides Cargill & McMillan and Van Natta other prominent breeders were Mousel Bros., of Nebraska; Cornish & Patton, of Missouri; and the Heath Stock Farm, of Illinois. Iowa exhibitors were G. W. Way & Son, Cyrus Tow, and the Cook's Brookmont Farm. Professor Mumford, of Illinois, made the awards.

THE ANGUS.

Angus entries were about the same in number as last year, but the herds were a little closer together if anything and competition was keen in all the classes, with few outstanding winners. With the exception of the Illinois herd of C. J. Off, it was entirely an Iowa exhibit, but as Iowa has been furnishing the bulk of the prize winners for the past six or seven years at all the big shows, this means the strongest kind of a show. Nearly every year brings out a new strong Iowa contender for the principal honors, and this year is no exception to the rule, the Rosengift Stock Farm bringing out a splendidly conditioned lot of entries and proving hard competition in all classes. Angus judges nearly always have a hard task, as there is little to choose between, quite often, betwixt the foot of the class and the top, and in many of the classes this was the case this year, the entries being very close together and hard to decide between E. T. Davis, of Iowa City, the well known breeder, placed all the awards save in the senior bull calf and junior heifer calf classes. Professor Kinzer, of the Kansas Agricultural College, acting on these classes at Mr. Davis' request, he having bred one or two of the animals in the ring and for that reason preferring to have another pass on the class in question. Mr. Davis is a good judge of cattle and did a good job of judging in the various classes. Angus cattle are so close together, however, that it will not be at all surprising if some of the future shows tell a slightly different story, as there is room for difference of opinion as between the many choice entries on exhibit. It is not likely that the herds will come together again as a whole until the Kansas City show, as part go to Minnesota and part to Nebraska from the Iowa fair.

The aged bull class this year is stronger than a year ago. Glenfoil Thickest 2d, graduating from the two-year-old class of last year, heads the class, while the Rosengift entry, Vala's Rosegay, stood second, and Jim Delaney, last year's winner in the same class, third. Mr. Battles was very strong in the bull classes all the way through, furnishing the two-year-old prize winner, also the senior yearling and the junior bull calf, the Rosengift Stock Farm furnishing the senior bull calf winner and A. C. Binnie the junior yearling.

The female classes were good throughout, especially close competition coming in the yearling and heifer calf classes, Binnie, Battles, Hess, McHenry, and Rosengift herds each furnishing winners in these classes. It was nip and tuck all down the line, and it need occasion no surprise if the awards be changed about in some of the future shows. We do not anticipate that there will be any large reversal of Iowa decisions, but the competition is so close between the many excellent entries in the Angus classes that good judges are liable and have license to differ in their opinion relative to the respective merits of the various entries, as the cattle seem closer together than ever this year.

THE GALLOWAYS.

Three herds comprised the Galloway exhibit this year, those of J. E. Bales & Son, Stockport, Iowa; Straub Bros., Avoca, Nebraska; and C. S. Hechner, of Princeton, Illinois. It was not as strong in numbers as the Galloway show has usually been at the Iowa fair, but the quality was excellent and some especially desirable specimens of the breed were exhibited. The show in this regard ranked well with former years.

RED POLLED.

All records for state fair exhibits were broken by the Red Polled breeders this year. Not only was the showing of this dual purpose breed the strongest in numbers that it has ever been, but it was also excellent in quality, there being as many as twenty-two entries in the ring in some of the classes, with the quality good throughout. The splendid showing of the breed was a matter of common remark, as the cattle were generally in excellent condition and we congratulate the Red Polled breeders on the splendid record that they have set for the Iowa State Fair this year It is seldom that the breed has equaled the state fair show this year at any of the world's expositions, and the breeders and friends of the breed have a right to be proud of the showing made. J. W. Martin, of Richland Center, Wisconsin, one of the best known Red Polled breeders, made the awards, and it was one of the most satisfactory jobs of judging that has been done at an Iowa State Fair on the Red Polled cattle for some time. Mr. Martin paid due attention to the dual qualities of the breed, and his work gave general satisfaction. Perhaps the two best classes of the show were those of aged cows and senior yearling heifers, both these classes being unusually strong in numbers and quality.

THE POLLED DURHAMS.

The showing of this breed was rather stronger than usual, five herds contending for the honors, three from Iowa, one from Wisconsin, and one from Indiana. The quality of the exhibit was excellent and the competition was close and interesting. With the exception of the breeder's young herd, which only had two entries, the classes were well filled and the exhibit as a whole was one which would do credit to the breed, one which, by the way, is growing very rapidly in popularity. Messrs. Shaver

& Deuker, who have been showing for several years at the Iowa State Fair, brought out a splendidly conditioned herd and had a little the best of it in prizes won, taking more firsts than any other exhibitor. Their aged cows, and they had the honor of winning the first three prizes in this class, also their roan bull, attracted particular attention and much favorable comment. Mr. Hadley, of Indiana, brought out some splendid young things in particular and also made an excellent showing, ranking next to Shaver & Deuker in the number of prizes won.

THE JERSEYS.

The exhibit of Jersey cattle was hardly as strong as in former years, although there were some excellent representatives of this popular dairy breed on exhibit.

HOLSTEINS.

Holstein exhibitors were John B. Irwin, of Minneapolis, Minn., and C. F. Stone, of Peabody, Kan., both old timers in the business, and August Winter, of Boyden, Iowa, a new exhibitor. Some excellent representatives of the breed were shown. Ribbons were awarded by Prof. H. G. Van Pelt.

THE HOG SHOW.

The high price of corn did not deter the swine breeders from making about their usual number of entries this year for the Iowa State Fair, and, as last year, Superintendent Johnston had to refuse space to a number of exhibtors because the mammoth hog pavilion containing 1,154 pens would not accommodate all who wanted to come. Yet the number was not quite as large this year as last, there being 2,600 this year and over 2,800 last. The new ruling, which limits exhibitors to two entries in a class, probably made some difference as to the number, and as usual some who made entries did not exhibit. The weather was ideal for a hog show. It turned cool about the time exhibtors started to ship to the fair and was cool most of the week, including the time for shipping out, so that there were not the usual losses by heat this year. A new feature of the show was the showing of Hampshires, which was large for a new breed. The different breeds were represented as follows: Duroc Jerseys, 896; Poland-Chinas, 846; Chester Whites, 442; Berkshires, 176; Yorkshires, 32; Tamworths, 83; and Hampshires, 197. Sales were not up to former years. The high price of corn is evidently causing the farmers to delay their buying of herd boars as long as possible, and then the management is working more each year to make the Iowa State Fair a high class hog show and not a sale mart of farmer boars. Public sales, too, are causing the farmers to buy more at home and less at the fair. Superintendent Johnston managed the show in a satisfactory manner, as usual, but needs badly some improvements in the judging pavilion so as to faciltate the judging without the interference of such a large crowd of spectators. This improvement is contemplated by the management and when completed the visitors will watch the judging from seats around the ring. This year the crowd was so much in the way at times that no judge could be sure he was doing good work.

POLAND-CHINAS.

The exhibit of Poland-Chinas was large as usual, but not so uniformly good nor so large as some former shows at Des Moines. Some of the classes were strong and some were very ordinary for the Iowa State Fair. The aged boar class, considering condition and all, was about the most ordinary class of aged boars that has been seen at the Iowa State Fair, yet our readers must not infer that there were no good ones in the ring. The two junior yearling classes were exceptionally strong and the pig classes were large and good. There were some good big ones found among the prize winners, but more of the small quality type. It would have been a good year for the big ones, as the judge was a man who looks well to size in his own breed. Mr. L. H. Roberts, the well known Duroc Jersey breeder, tied the ribbons.

DUROC JERSEYS.

As last year, the Duroc Jerseys outnumbered any other breed. It was a big show, but no better than last year, if as good. The exhibtors came from several different states, a number from Nebraska, on the west, and from as far east and south as Kentucky. The show was not characteristic for sensational winners, although a better two-year-old Duroc Jersey boar has not been seen at an Iowa State Fair than Model Chief 2d, the sweepstakes winner this year, and he is far better than the sweepstakes winner at some recent Iowa State Fairs. Mr. N. H. Gentry, the well known Berkshire breeder, did the judging, and it was quite interesting to Duroc Jersey breeders to learn how the prizes would be placed from a Berkshire standpoint. It can not be said that the breeders in general always agreed with the judge, and while no one accused him of being unfair or incompetent, yet there were those who thought that a man who had looked at and admired a dish-faced, straight-eared, quality Berkshire for a lifetime was not so well qualified to judge Duroc Jerseys (a breed that has gained great popularity because of the demand for a somewhat coarser, more prolific type than some of the other breeds supplied) as a man would be who had bred Duroc Jerseys and knew and admired their characteristics. Outside of a few of the pig classes, however, the judging was pretty generally satisfactory, and on the large pig classes the judge did not have a fair chance because there were so many spectators in the ring that he could not well compare the pigs for the people. The prizes were distributed among a large number of exhibitors, no one breeder getting many prizes.

CHESTER WHITES.

About the usual number of Chester Whites were in the pens, the number having been around 450 head for several years. It was largely an Iowa exhibit, with exhibitors from nearly every part of the state. As will be noted by the awards which follow, the prizes were divided among a large number instead of among a few exhibitors. The champion boar was L. C. Reese's O. K. Mikado, who won first and championship at the Iowa State Fair on two former occasions. Championship on sow was won by E. L. Leavens on a sow of his own breeding. He also had the champion boar bred by exhibitor and won first on aged herd and get of sire classes, while Reese won first on young herd. W. Z. Swallow, the pioneer Poland-China breeder and exhibitor, tied the ribbons.

THE BERKSHIRES.

There was a good exhibit of Berkshires, although not large. With the exception of one herd it was an all Iowa exhibit. The exhibtors had an expert Berkshire judge in Mr. Gentry, and the judging was entirely satisfactory. There were 176 Berkshires in the pens this year, which was a small exhibit compared with the Duroc Jerseys and Poland-Chinas, but is about the usual number of Berkshires at the Iowa State Fair. Considering the importance of Iowa as a corn and hog state and the popularity of the Berkshires with the packers, it would seem that the Berkshire men would make a bigger showing, and their small exhibit at this fair has often been a matter of comment.

HAMPSHIRE SWINE.

There was a good showing of this white-belted breed of swine, especially for a comparatively new breed, and considering that it was the first show the Hampshire breeders have made at Des Moines. The exhibit attracted much attention and the Hampshire men had a good week. Prof. J. J. Ferguson did the judging and made the awards.

TAMWORTHS.

There was about the usual showing of this bacon breed of hogs, and the Tamworths attracted their full share of attention from the visitors. Prof. J. J. Ferguson awarded the prizes.

YORKSHIRES.

Only one exhibitor had animals in the Yorkshire classes, and all prizes went to B. F. Davidson.

THE SHEEP SHOW.

We do not remember of ever having seen a stronger sheep show at the Iowa State Fair than this year. All the barns were filled and the quality of the sheep on exhibit was excellent. All the breeds were represented, and we venture to say that the exhibitors will have found it well worth their while to exhibit at the Iowa State Fair, as Iowa is worthy of more attention in the sheep line than it has received at the hands of the breeders. One of the interesting features of the sheep show was the public sale of Shropshires and Oxfords by McKerrow & Sons, of Wisconsin, on Thursday. It afforded breeders an opportunity to buy the best class of imported stock, and that it was appreciated is evident by the success of the sale. Professor McLean, of the Iowa Agricultural College, judged the sheep classes, with the exception of the Rambouillets and Merinos, which were judged by G. W. Hervey, and the Cotswolds, Leicesters, and Lincolns, which were judged by John A. Craig, formerly a professor in the Iowa Agricultural College.

MERINOS.

There were two exhibitors of Merinos, Uriah Cook & Son, of Peoria, Ohio, and E. M. Moore, of Orchard Lake, Wisconsin. Messrs. Cook won all the first prizes.

RAMBOILLETS.

E. M. Moore and Robt. Taylor, of Abbott, Neb., and Max Chapman, of Marysville, Iowa, were the exhibitors of this breed. Mr. Moore won first in the aged ram, ram lamb, aged ewe, yearling ewe, ewe lamb, four lambs, flock, and champion ram and champion ewe. Mr. Taylor won first on yearling rams.

COTSWOLDS.

This breed was exhibited by F. W. Harding, of Waukesha, Wisconsin, and Lewis Bros., of Camp Point, Illinois. Mr. Harding won all first prizes and championships.

SHROPSHIRES.

The Shropshire show was the strongest of any of the breeds. Messrs. Harding, Taylor, and McKerrow being the exhibitors from outside the state, while Chandler Bros., of Chariton, Ia.; Kauffman Bros., of Moscow, Ia.; J. L. Plumley, of Springville, Ia.; Peasley & Son, of Indianola, Ia., were the Iowa exhibitors.

OXFORDS.

Geo. McKerrow & Son, of Wisconsin, and John Graham & Son, of Eldora, Ia., were the exhibitors of Oxfords. Messrs. McKerrow won first in the two-year old ram, ram lamb, two-year-old ewe, yearling ewe, ewe lamb and flock classes, also both championships. Graham & Son won first on ram lamb and first on four lambs.

POULTRY AT THE IOWA STATE FAIR.

The poultry at the Iowa State Fair this year was not the exhibit it should have been nor the exhibit it would have been had it been made worth while for the poultry breeders of Iowa to show. As matters are arranged now, the breeder who shows at the state fair must feed his own birds and bring his own feed if he wishes to make sure that they are properly cared for. Many breeders who would otherwise make an exhibit do not because it is an impossibility for them to attend the fair in person or send a representative.

On Tuesday afternoon Secretary Wilson made a brief visit to the poultry department, and in his speech the following day called the attention of his audience to the fact that the poultry department was not receiving the attention it should from the hands of the board. As Secretary Wilson said, they seem to have a very competent board of directors, but the attention of this board has evidently not been called to the poultry department. "There is only one place where Iowa could improve," said Secretary Wilson, "that is in the poultry department. The poultry industry of the United States is greater than the wheat industry, and almost up to the cotton. It should receive more attention." As is usual at the fall fairs, the birds in the best plumage carried off the ribbons. Some excellent stock, young and old, were shown. We are unable at this writing to get any figures as to the size of the exhibit. Our own judgment is that while there were fewer birds shown than last year there were more small exhibits and more of the exhibits were from the farms. This is as it should be. Iowa exhibttors should be encouraged to bring their chickens as well as their horses, pigs, and cattle to the show. There are too many farmers breeding pure bred cattle and scrub chickens.

The Iowa State Fair is the place to show the farmers and the townsmen what Iowa is doing in the poultry line.

THE MACHINERY EXHIBIT.

The machinery exhibt at the Iowa fair this year was the greatest that it has ever been, all the available space on the grounds being utilized, and the manufacturers reported a greater interest was taken in the exhibits than ever before. The machines in practical operation attracted particular attention, and crowds of interested spectators were on hand when the steam plows gave their demonstration, and when the grain drills were shown at work seeding. The Superior, Van Brunt, Hoosier, Kentucky, Monitor, and Peoria drills were all shown in operation, and many farmers availed themselves of the opportunity to study the grain drills at work. It is impossible to mention the various exhibits of machinery and in detail. Suffice it to say that there was no implement that the farmer could be interested in but what was exhibited on the grounds, and the exhibit was one of benefit both to the manufacturer and the farmer. We hope to see more and more machines shown in actual operation at future fairs, as it is an ideal way to show farm machinery, particularly anything new, and it adds much interest to the fair.

CAMPING ON GROUNDS.

Each year an increasing number of people camp on the grounds. Many within driving distance of Des Moines come in covered wagons and bring their own tents. Many more rent tents. This year there were a number of camping clubs of ten to twenty each, made up of neighbors and friends who rented a large tent and distributed the cost equitably. This suggests the idea that we are coming to the time when community bungalows might be erected under proper restrictions. The way to see the fair comfortably is to stay on the grounds at night, thus avoiding the congested lines of traffic morning and evening.

EVENING SHOWS.

There was far better provision for the entertainment of folks at night than ever before. On a stage in front of the grand stand a high class vaudeville entertainment was given, concluding with a magnificent display of fireworks. In the live stock pavilion the entertainment was of the circus or hippodrome variety, including each evening a parade of prize-winning horses and cattle. The circus features were mostly in the nature of exhibitions of educated animals, horses, mules, cattle, hogs, and even sheep. It was both instructive and entertaining and the seating capacity of the pavilion was taxed to the utmost each evening. These entertainments proved very popular and will probably be continued and improved another year. They also serve to keep the crowd fairly well scattered and prevent serious congestion.

IOWA STATE COLLEGE EXHIBIT.

The exhibit of the Iowa State Agricultural College attracted great attention and was one of the most instructive exhibits on the ground. The building formerly occupied by the secretary and treasurer of the fair was turned over to the college and was found none too large for its purpose. Among the different departments of agriculture represented here were the farm crops, the farm machinery, the dairy, the extension, and the horticultural. Each department was in charge of a specialist along that particular line who was ready to answer all questions concerning the exhibit of which he was in charge. Among the most instructive exhibits was the collection of weeds and weed seeds. Many spent a profitable half hour here learning the names of our common weeds and the appearance of the weed seeds ordinarily found in clover and alfalfa. The college is to be commended on the practical nature of their exhibit.

BREEDER'S GAZETTE, CHICAGO, ILL.

All signs did not fail in dry weather this time. The signs of the Zodiac have jumped the fence, but the signs of the times still continue to cast shadows before that find their complete confirmation in the event. A show of unusual strength and impressiveness was expected at Des Moines, from all prophetic indications, and the realization was complete. The fifty-fourth annual exhibition of the Iowa State Fair made glorious history in the annals of cornbelt agricultural fairs. Neither the flood nor the drouth of the present growing season prevailed against it.

The improvement of these grounds proceeds apace. The pace is not as rapid as the requirements demand, but it moves on all-fours with financial possibilities. The rehabilitation of a state fair grounds to accomodate in modern style the aggregations of exhibits which annually assemble at Des Moines is a gigantic task, and nobly is Iowa meeting the emergency. Much has been done, much remains to be accomplished. The net total added to the equipment, which will stand for long years to come and serve to identify these grounds as among the best fitted in America, was the administration building and a new horse barn. The administration building was a tardy recognition of the unsparing, unselfish and taxing labors of the executive officers of the fair. The public—and even the pigs

—had their measure of comfort before the officials of the fair were installed in suitable quarters for the convenient and expeditious discharge of their duties. These have now been provided at a cost of $30,000. Pictures spare the necessity of architectural description. The new building is located immediately south of the grandstand and on the main road into the grounds, commanding the intersection of the two driveways as they join to continue up the hill. It is constructed of brick, after plans which involved much study and which in use have been proved to be well laid. The departments are arranged around an open court, and most of the offices of superintendents may be entered from the outside as well as the inside. A broad piazza extends entirely around the building and furnishes suitable resting space and view points from which to watch the kaleidescopic activities of a goodly portion of the grounds. The second story of the new building has not yet been finished off into sleeping rooms for those whose duties require night as well as day attendance. The basement has been rented for a restaurant and the rental renders a fair interest return on the investment in the construction fund. Officials pronounce the new building quite satisfactory in all respects after the test of this season.

The tremendous demand for stalls from the constantly increasing entry list of horses spurred the board into almost record-breaking building in that department. Eventually this equipment will contain eight brick barns, joined by roofs with an open court yard in the center. The second of these barns was rushed through to completion when it was found that the department was fairly overflowed with entries. When the barns are all built, stall accommodations for about 800 horses will be provided and in substantial construction, light, ventilation and all conveniences these barns will leave little to be desired.

Plans to which the board of agriculture is working contemplate a request to the legislature for $125,000 with which to erect a new grandstand. The moving of the race track will be necessitated by the present plan and the entire cost of the work, including a grandstand of structural iron and concrete floors, will likely be around $125,000. Accommodations for 15,000 people will thus be provided. Moreover, the amazing display of agricultural implements cries aloud for roofing, and the board expects to ask for an will thus be provided. Moreover, the amazing display of agricultural implements cries aloud for roofing, and the board expects to ask for an appropriation of around $100,000 for the erection of a vast train shed affair under which all the machinery and implements may be sheltered except those which have been furnished with "homes" by private enterprise. The capital use to which the state funds have thus far been put, the impressive and permanent results which have been achieved, and the popularity of the improvements with the public certainly afford ample foundation on which to rest an effective appeal to the legislature.

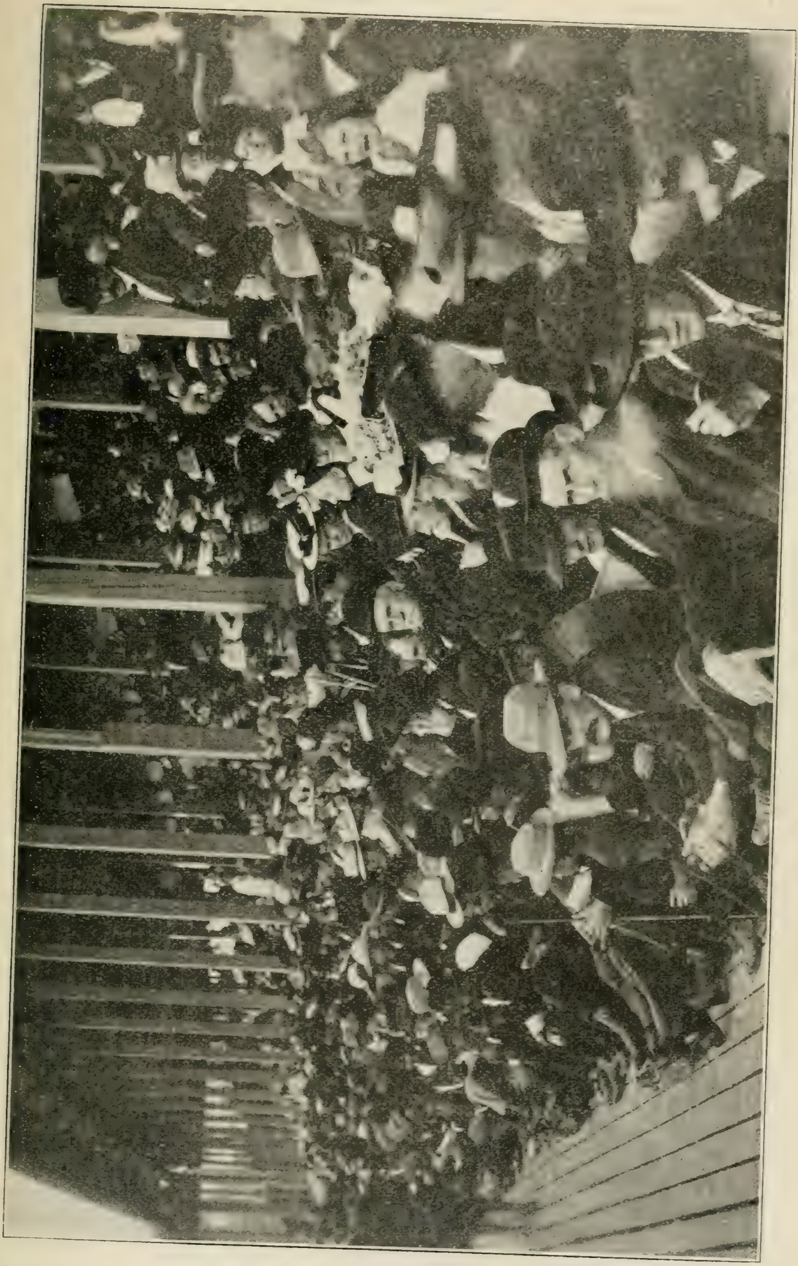
Among the betterments which must come shortly, with a view to the best interests of the fair, are an enlargement of the live stock pavilion and the erection of seats around the judging arena in the swine department. We built about as well as we knew in the early days of live stock judging pavilions, but Illinois quickly had to knock out an end of its coliseum and enlarge it about one-third, and Iowa must follow suit. Thousands are each year turned away from the doors of the Iowa pavilion while the judging is in progress. It is just as much of a mathematical impossibility to crowd into the pavilion all who desire to see the judging as it is to compress two quarts of water into a one-quart jug. The magnificent swine section is not yet finished, but while waiting for funds with which to carry out the complete design the board should without fail provide seats for spectators around the judging rings and keep them from literally swarming over the judges and exhibitors as they did last week.

Every thinking farmer who visits the Iowa State Fair and notes the modern conveniences for the care and the exhibition of live stock returns home an earnest advocate of the continued rebuilding of these grounds until accommodations are wholly adequate to the demand of exhibitors and spectators.

Coming within the shadow of the live stock pavilion the official figures tell eloquent tales of an interest and enthusiasm that neither time nor tide can touch, that neither financial disturbance nor unfavorable seasons have discouraged. Over 800 cattle were on the grounds, contributed by 80 exhibitors. The record runs somewhat, although not measurably, above the totals of last year. The most notable features are the superbly high level of the quality and the better balance of the exhibit by breeds. Shorthorns were about 100 less in number than in 1907 and by that much the better in average excellence. Herefords doubled the number of their exhibitors, reaching up to a total of 18 who made entries, and thus a better balance was presented. Red Polls and Polled Durhams made record-breaking displays, number mounting up into an impressiveness that was telling, and quality running brim-full. Aberdeen-Angus were about an average in numbers, but distinctly higher in class than on recent annual occasions, while the Galloways were somewhat fewer in numbers, but of admirable quality. In the dairy division deficiency falls again to be recorded. It is idle to philosophize on the fact that with all the greatness of the state in dairy production neither its exhibit of dairy cattle nor of products rises in volume to the dignity of a lively county fair.

Automobiles were parked around the swine department and the live stock pavilion and encountered on every driveway, and the high-wheeled autos especially built for country use were plentifully in evidence, and yet the number of horse exhibitors exceeded last year by about 25 per cent and reached the total of 87. And by actual entries there were 765 horses on exhibition. Numbers of course carry weight in such a presentation, but that weight is markedly increased when it is stated that broadly speaking the excellence of the exhibits as a whole was perhaps never excelled at this fair. There were those who put the case more strongly, but we are apt, in the enthusiasm of the present, to forget the impressions of the past. There were some weak spots in the horse exhibit, but it will take high rank as a whole in the annals of such exhibitions. Overflow barns were hastily erected.

When a thing is full it cannot be fuller. That is the chronic condition of the swine department at Des Moines. On no ground in the world are porcine accomodations so substantial, so elaborate, so commodious and so convenient. Seating accommodations at the ringside are alone lacking.



Scene in the Grand Stand, Iowa State Fair and Exposition, 1908.

About 2,500 swine is the usual entry. The pens will hold more if pigs are plentiful. We found no statistician who had attempted to enumerate the actual entries. The pens were full, the quality was high and the arguments over the decisions of the judges were quite as lively as ever.

Sheep reached up around 650, which was nearly 150 more than last year. The "gentle shepherds" went gunning for one another with all the old-time vigor and some highly interesting exhibits were set before onlookers.

Summing it all up on the entry side, Secretary John C. Simpson authorizes the statement that he issued 1,325 exhibitor tickets to the 1908 Iowa State Fair—an increase of 130 over last year's total. And thus is epitomized the story from the inside view of this great fair.

Iowa railroads are accustomed to hauling the products of the farm in vast volume from the prairies of that state. It would seem that they should some time grow accustomed to carrying the human products of the same farms to the state fair. But railway corporations, like individuals, are apt to be of little faith at times. We are writing without a detailed knowledge of the attendance at Des Moines last week, but it is known to be record-breaking. Just how many thousands more would have been clicked up through the turnstiles if the excursion trains could have carried them will never be known. Reports came from all roads that the special trains were running full past station platforms filled with people who were headed toward the fair. Last year excursion rates were denied, but the unbusiness-like, not to say unpatriotic, nature of this refusal became manifest and a one and a third round trip was granted. Equipment was borrowed by some roads, but cars proved inadequate to the demands made on them by farmers who sought opportunity to inspect this great agricultural exhibition. The attendance was well distributed. Monday was a rousing big day and Tuesday came near breaking the highest day's record in the history of the fair. The weather seemed somewhat settled from the erraticism which has worried the Iowa farmer. A light shower fell early Wednesday morning, but the early opening days were most delightfully cool—capital for comfort if not for corn. The mercury during the closing days reached up more nearly to a normal August mark. The attendance was in money-making volume, rejoicing the hearts of the managers, proving the loyalty of the Iowa farmer to his central fair, and demonstrating anew that the enterprising people of this magnificent agricultural commonwealth are keen to utilize their educational advantages.

Iowa is endeavoring to mix entertainment with its instruction at this fair. Band concerts and acrobatic performances of varied character are sandwiched between the races in front of the grandstand in the afternoon, and at night concerts and magnificent fireworks spectacles are presented. In addition to this line of attractions, which have been successfully presented for some years, the live stock judging pavilion was made a magnet of evening attraction by performances which presented one of the most remarkable combinations ever witnessed. The fore part of the entertainment brought into the arena magnificent parades of the horses and cattle on exhibition, each breed preceded by a banner announcing its idenity for the benefit of the uninformed. One of the most unique and most pleasing spectacles ever staged at such an exhibition was the dairymaid's drill, performed by ten young women from the Iowa Agricultural College at Ames, while the dairy cattle were on parade. Each of the animals wore a Swiss cow bell, and the tintinnabulation suggested vividly winding homeward o'er the lea of dairy herds galore. This dairymaid's drill was given by a college class in calisthenics, ten young women gowned all in white, five of them carrying beribboned milking stools and the other five beribboned milkpails, and the graceful evolutions of the drill, performed with spirit and precision to the music of the band and the tinkling of the cow bells, formed a feature of singular attractiveness and thoroughly consonant with the character of the occasion. This exercise was originally introduced as a May dance at Ames, and it was a happy thought which suggested its reproduction during the parade of the dairy cattle.

This arena further afforded a striking linking of the past with the present, and an instructive illustration of the progress in transportation which has marked the past half century. The entrance of the Armour six-horse team of grays, sufficient in itself to enthrall the attention of assemblies on both continents, received measurable emphasis by contrast with the "Gee, haw, whoa!" of the ox driver preceded the entrance of a genuine old "prairie schooner" drawn by a yoke of oxen. The wagon, loaned by the historical department at the state house, was somewhat of a wreck in its slatted body, but the gears were in fair order, and more than a hint of the manner in which the trail of civilization was blazed across the trackless prairies of the great American desert was afforded by this historic exhibit. The contrast in transportation, the old-time, patient slow-moving oxen in the yoke, and the prancing ponderous draft horses of the present era, clad in their beautiful and brilliant harness and housings, touched chords that vibrated more deeply than those to which mere amusement appeals.

The rest of the program was taken chiefly from the circus, including trained elephants, donkeys, dogs and bulls, with the clown and acrobatic features so familiar through all these years of perennial circus performances. It was not especially enlightening, but it appeared to be entertaining to the assembled thousands, and rounded out with the froth of mere amusement a day and a night that had been crowded to the full with educational tendencies.

When the 45 acres of agricultural implements are reached one's lungs inhale the real Iowa atmosphere, one's vision broadens to the wide sweep of its activities and possibilities. Here is a real index of the agricultural importance of the commonwealth. Four hundred exhibitors contributed to it, about 100 more than last year. Every conceivable variety of farm implement is in evidence, all of them suggesting strikingly the modern need of supplementing and economizing human labor by machinery. Motive power was present. The ponderous traction engines, propelled by steam and by gasoline, the stationary gas engine in its multiplicity of forms, edging now on to what may be described as the "vest pocket" size, and the farm auto all offered power, traction and transportion to the farmer. The gasoline engine was readily the dominant feature of the exhibit, and possibly the manure spreader was next numerously represented. Several sermons could be preached from these texts.

A working feature that attracted thousands of visitors was the steam plowing and grain drill exhibitions. A plot of about 15 acres was set aside for the gang plow drawn by steam and gasoline traction engines, and at regular assigned intervals a gang of plows was started turning furrows. Their work appeared to be very satisfactory. Following them came an exhibition of the working of grain drills, and so thoroughly had the feet of the thousands who followed the plows pulverized and leveled furrows that harrows were not needed ahead of the drills. This behemoth department, surcharged with interest and value to the farmer, imperatively needs the sheltering roof of the great shed which has been planned by the fair managers, and which depends for its realization on the liberality of the next legislature.

Live stock is the corner stone of Iowa agriculture. This fair annually submits proof of that fact. This season is summoned exhibits from as far east as Ohio and as far south as Kentucky, while Minnesota on the north and Nebraska on the west marked the boundaries in those directions. The three essential elements to a complete measuring up to the opportunities were here present—numbers, quality and interest. The winnowing floor of the state fair has blown away the chaff. Not even the attractions of closed classes, for state exhibitors only, brought out much sub-standard stuff. Numbers were a little reduced in some sections, but the tail-end had been cut off to the advantage of all concerned. The net result of the years of successful educational work at this fair was the most satisfactory showing in the stock department that has yet been credited to its history.

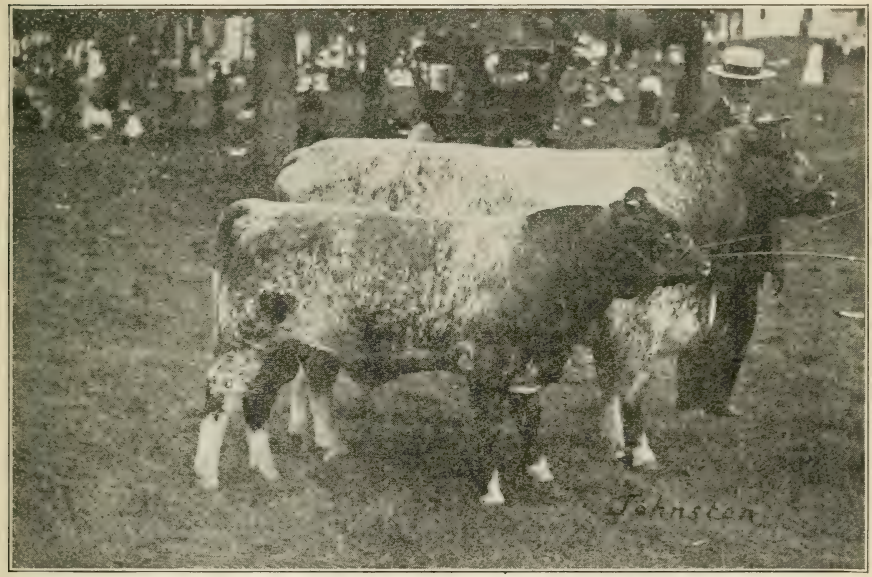
Such in summary was the 1908 Iowa State Fair. The prize lists in the live stock departments are presented, compiled by our reporters with care, and a few general observations are submitted on the several sections. Obviously a show of such magnitude does not lend itself to the detailed reports which aforetimes this journal was accustomed to present, when exhibitors were few and entries light. The battles of the breeds have outgrown, through their very magnitude, the detailed accounts of individual prizewinners which in the early times formed the subject of these annual reviews.

THE CATTLE SECTION.

THE SHORT-HORNS.

The quality of the cattle in the Short-horn section averaged better by reason of lessened entries over last year to the number of about 100. The offer of prizes open only to exhibitors who live in the state resulted in the past in getting out quite a few animals that were not up to state fair standard, and it requires some years of experience for exhibitors to get that standard well fixed in mind. That the lesson has been learned seems evident. This show ground has witnessed some historic presentations of the "red, white and roans," and the one last week deserves to take high rank among them. Its conspicuous feature was the uniformity of excellence that ran through most of the classes. Some outstanding animals appeared, but even in these classes merit was carried well down toward the end of the company. Most of the "crack" show herds of the breed seek this opening engagement, as it is known that the crossing of steel here strikes flashes that hint as to results on down the line during the season. Hence intense interest attaches to the initial engagement at Des Moines, and a large company hung close on the decisions the week long, requiring the emphatic orders of a mounted ring marshal at times to keep them back out of the way of the judge. An artistic job of ribbon-tying was performed by Capt. T. C. Robson, Ilderton, Ont. Rarely has more satisfactory service been rendered by a judge in our showyards. And of course at that there were those who did not at all times see through the same eyes.

Aged bulls presented some old time favorites. While Whitehall Marshal is still formidable, the superior freshness of Whitehall King, a much improved bull over his last year's form, may at any time reverse the award. The fine stamp and accurate mold of Golddigger suggest showyard possibilities that his present condition has not developed. Clear the Way, a red and white, presented a capital form and agreeable smoothness and the low-set blocky red Good Lad was pleasing. This class of bulls was sent forward in good form for the most part and made a highly creditable display. After Anoka Sultan assumed his rightful position among the two-year-olds the strength was hardly so well maintained as in the preceding ring, although useful animals were on view. Snowflake's fine front and smooth back were notable, and the evenness of City Marshal was apparent.



First Prize Short Horn Junior Bull Calf (Open Class) and First Prize Aged Cow in Iowa Class.—Iowa State Fair and Exposition, 1908.

King Cumberland readily wore the crown without dispute among the junior yearlings. He is for the most part made of championship material, wanting a little more finish in the hind quarters. This light roan is so well matured, so clever in his outlines, so wealthy and level in his flesh that he proved one of the bright stars of the show. The red Royal Diadem was a trifle further from the ground but a handsome and nicely finished bull, pleasing in his front and quite accurate in his lines. Count Abbot is a real thick one. The classes, already of agreeable proportions, began to "bulk up" when the 21 senior calves entered the arena, and the excellence of the youngsters was as notable as their numbers. Leader of Fashion proved a well-christened calf, and the stamp of this roan is very taking. his companion Baron Sultan is thicker and somewhat deeper of rib. King Champion 2d is a very fleshy smooth red. The juniors could not equal in quality their older companions, but Malaka's Goods was toppy enough for the leading place, a real good roan with only a trifling unevenness at the tail head. Those which followed him were fair.

It is unnecessary again to revert to the condition of continued fitting which lands three-year-olds in the cow class in rather lumpy condition. It was marked on this occasion, as it has been for years in the past. But Flora 90th, which stood second at Chicago last December among the two-year-olds, has chiefly escaped the unfavorable results of much feeding and was a clear queen in this company. She has ample scale, much substance and a taking smoothness, although somewhat lacking in the sweet femininity that characterizes Lovely of Grasmere. This cow is not so heavily weighted as some of them, but yet a trifle uneven in flesh. Missie of Browndale 12th carries a great lot of substance, having matured according to her promise, but has failed to lay it on quite as smoothly as would be desired. The broad-loined Grace is scarcely so wide through the fore ribs as is liked. The two-year-olds made a fair class, with a very beautiful head in Poplar Park Queen, that starts anew a winning campaign, handsome, fresh and sweet. Anoka Gloster has characteristic spread of frame and the depths that classes an animal among the blocky ones. Sinnissippi Rose—these are all names which have filled the prize list in previous years—carries depth and smoothness and beautiful finish. Among the senior yearlings Sultan's Athene walked her way through a large company of eighteen to the top position, pushing her scale and bulk irresistibly along. This popular calf of last season has come into a great yearling, with beautiful front, broad bosom, shoulders smoothly laid and covered, and a roominess that suggests early maturity. Anoka Countess is very sweet of head and countenance, an attractive heifer in her finish as well as her beef form. Bernice needed further fitting to get higher up, but her feminine attractiveness, her finish and her level outlines stamp her as a choice one. A broad-loined, low-legged roan is Elmendorf Lassie. Beaufort Princess 3d asserted claims to honors among the juniors, by reason of her strapping size and blocky form, with its ample wealth of flesh under her roan coat. The roomy red roan Lady Graceful, with the pleasing finish of an incurve horn and sweet head, commanded favor. The neat white Gloster Sultana looked well on the list and Veronica 5th presented a blocky form in a coat of red hair. The thirty-four senior heifer calves recalled some of the classes at the great breed shows, when orders were sent scurrying about to get together the executive committee to enlarge the prize list to take in ten or a dozen more worthy ones. Here two types invited and in selecting the large more mature sort, with greater scale, the judge had followers, as did also those who would have taken the blockier sort as a starting point. The white Countess is finely grown and beautifully fashioned, and the flesh is very smoothly disposed until the hind quarters are reached. There is a sweetness about her that will win almost any judge. The same general stamp is found in Diamond Anoka, another white, perhaps not just so even in her lines as the one set above her, but quite ripe. Outside favor ran some little toward the blocky roan Butterfly Queen and Flynn Farm Missie, another of the same build and color of hair, for first and second on the list, but the judge had a better furnished body in the two whites he preferred. The sweet white nugget Rose of Elmendorf was much liked. Among the fourteen juniors some beautiful roans were sent up to the top of the class, and Susan Cumberland was esteemed the best of them, while her companion Scottish Sempstress fell back before the Isabelle, which presented a highly satisfactory back and hind juarters.

THE HEREFORDS.

There was very little public information which would lead to the expectation of such an array of "white-faces" at this fair. Exhibitors of this day are not much given to sounding a trumpet before them. They like to keep their best ones, and sometimes even the intention of showing, under cover as much as possible, and spring the exhibit as a surprise. There was material enough for a surprise at Des Moines. Last year nine exhibitors contributed to an interesting show. This time twice that number furnished one of the most stubbornly contested battles of recent years. Some times in the past strength lay rather in numbers than character of the exhibits, but barring possibly one company the breed maintained its standing very creditably throughout the list. The experienced fair-goer has learned to be prepared for sensations among the Herefords, and he is rarely disappointed in this regard. Certainly plenty of entries at this time reflected great credit on the breed and some of them sustained well the reputation of the "white-faces" for presenting animals of the sensational stamp. Prof. H. W. Mumford, Urbana, Ill., assigned honors, and on the entry of the female classes he had as consulting judge, E. B. Mitchel.

Nine aged bulls, and no "mean" ones among them, made an impressive display. There was only one extreme of type, the "nuggety" Prime Lad 9th, as the big old-fashioned coarse type was notably absent. The bull just named and Bonnie Brae 3d are old-time rivals, and at the outset this season Prime Lad 9th assumes the lead. He is not so large as the other, but he is stuffed about as tight in his hide and carries it more smoothly. It would be difficult to get these bulls to carry any more weight. Weston Anxiety has the feeder, not himself, to blame for failure to reach higher up. Barring a tendency toward roughness of shoulder, this bull is about as satisfactory in his type, character and form as any feeder ever started toward championship honors. It can scarcely be said that the two-year-olds measured up to the standard of the older bulls, nor was the type quite so modern, after the head of the class was left. Beau Carlos had no trouble in claiming premier honors, as he is a splendid model, especially attractive in the fashioning of his hind quarters. The senior yearling Prime Lad 38th is quite a "classy" bull. He is not the chunk that the older Prime Lad Bull is, inclining more to the larger pattern, but he is admirably formed and finished and carries with him a style and presence that count for much in any male. Gomez Perfection carries the mold of the Weston stamps, blocky and well spread. Heath's Money Maker has no length of leg to spare, and his smoothly-turned top and general sogginess are pleasing. Among the baker's dozen of junior yearlings six were of exceptional merit. Castor, the junior champion of last year, has come on apace, on the same plan and from his "bully" head to his perfectly finished hind quarters he is a rare one, with much spread of carcass and wealth of flesh. Between him and Princeps 15th a lively scrimmage occurred, as the latter is a great show calf, modeled on exquisite lines, but he is on the large pattern while Castor represents the blocky sort. A Prime Lad and a Bonnie Brae again came together in the senior calves, the winner a fine specimen of the breed with ample scale and choice promise. The youngsters were very bonnie, nearly all six of them. The winner Harold is very even in make-up, and Perfector needs only a little more flesh.

The talent on the outside was by no means content with the rating of Mignonette at the head of the cows. This egg-like yellow-red three-year-old is a familiar figure. She has few "holes" in her form, but has stopped short of the size that a female of her age should carry. Pretty Face was the decided favorite and Princeps Lassie, a typical sort in fine bloom could well have stood next to her. Pretty Face presents one of the most satisfactory show yard representatives of the breed that has appeared in the cow class in recent years. Priscilla carries ample scale and a level top with broad loins. Among the twelve forward the type ranged upward from the "nuggety" Mignonette to some of quite generous size. The two-year-old Hereford heifers rarely disappoint. Some beauties were grouped up toward the top. Miss Filler 2d and Miss Filler 7th, a magnificent pair, the former pushed to the very limit and yet as smooth as an egg, were divided by the big and burley Margaret that may yet find favor for first place. Mary Gertrude is of the same description in her forwardness and rotundity. Fifteen senior yearlings saluted, and rare gems were among them. The winner Princess 2d filled well her position, praise of her parts extending down to the fullness of thighs. Cleo is cylindrical and smoother than her companion Iba, which however carries more breadth. Princess 7th takes rank among the greatest of her sire's rich progeny, and Missouri Queen and Heath's Gem are high-class heifers, but toward the tail end of these 16 were a number that stood considerably below the average of excellence. The calves, 21 seniors and 17 juniors, maintained well the reputation these classes have long carried for sappy maturity, and the winners were satisfactory specimens.

THE ABERDEEN-ANGUS.

An exhibit in consonance with a long-time record of this breed at Des Moines must necessarily be pitched in a high key. The strength of the Aberdeen-Angus in Iowa, the superior character of the herds long maintained, and the enterprise of their breeders are factors which have long made brilliant history at this fair. And this year all expectations based on past accomplishments were quite fully met. Numbers have at times been larger and yet the representation was gratifying in that respect, while as regards freedom from inferior or even indifferent animals, this exhibit was gratifying to the pride of all adherents of the breed. It was a strong clean show, one that stimulated.

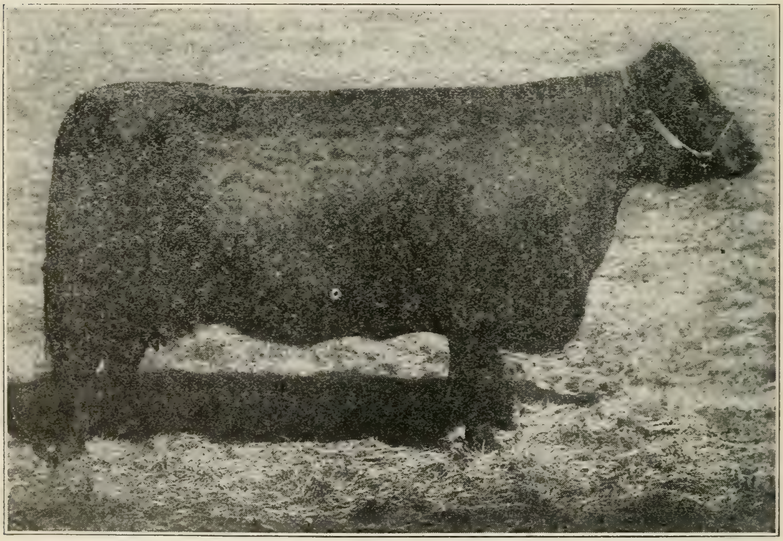
The three-year-old bull Glenfoil Thickset 2d has quite justified expectations and enters the list afresh, with another year's development that has been carried forward very uniformly. He is a capital example of the blockiness, bloom and beauty of the breed. Vala's Rosegay is a wonder in his way, his legs affording no more length than is necessary to locomotion, and his compact rotund body filled in every part almost to bulging. Jim Delaney holds his form very well under years of showyard fitting. The two-year-olds furnished a real beefy company, headed readily enough by Golden Gleam. The senior yearlings were a fair lot but the juniors were scarcely up to the high mark. The senior bull calf class held some very promising material, the winner Prince of Quality readily enough claiming his position and justifying his name. He is a grand youngster and should go forward to a very notable career. The head of the juniors also attained his rank without difficulty, and Thickset Blackbird is destined to become well known in fair history, barring accident, as he well sustains careful examination.

A beautiful lot of matrons, almost all in beautiful flesh and superb bloom, delighted the eyes of the onlookers. The Angus females never disappoint the most critical searchers after bovine attractiveness, and here we had it in rich measure. Into the contentions of this competition we do not enter. Perhaps Glenfoil Queen 2d may want scale a bit in her three-year-old form, but she certainly carries weight for her size, and her substance and sweetness are outstanding. It was a triangular difference of opinion, as Winnie of Meadowbrook, winner in the cow class at the International, and Abbess McHenry 6th never lost sight of premier honors until their younger rival secured firm hold on the ribbon. Winnie carries wonderful smoothness and bloom and will acquire somewhat more of condition as the season advances. Abbess was clearly the most massive and with her beautiful feminine front and her level thickly fleshed back she had points on which to center her claims for preference. Gussie of Kirkbridge perhaps was never in better form; her fine top and her sweet front attract attention always. Such evenly matched contents kindle much interest and enthusiasm. The two-year-olds were a capital lot, as is ordinarily the case, merit holding up throughout, although perhaps a trifle of over-condition was in evidence up toward the top. The standard was not upheld throughout the senior yearlings, although the first three picked ones were satisfactory. Eza Lass is a remarkable heifer built on the "bullet" plan, very even and thickly padded with flesh. Brookside Quality

Queen 2d carries more scale but is not so level and even along the back. The junior yearlings quite atoned for the little slackness among the preceding class, as they brought into the ring as beautiful a company of bonnie blacks as one would wish to see. About a dozen of them made hard work for the judge, and when the two calf classes, the seniors an even dozen, and the juniors only two less, came forward in their turn, the showing of the individual classes were brought to a most satisfactory conclusion. There were gems in plenty among them.

THE GALLOWAYS.

Rarely has the Galloway breed revealed finer character and quality than arrested attention in the well fitted exhibit made on this occasion. Numbers were below the mark set at some former fairs, but the cattle were distinctly high class. A. C. Binnie, Alta, Ia., tied the ribbons. It is evident that the art of fitting Galloways is being mastered by some herdsmen. It is equally evident that "shaggy-coats" will respond to the right kind of treatment. During the last five years the breed has improved markedly in its beef qualities. Showyard candidate stand closer to the ground, show greater spring of rib and better filling about the shoulder. These betterments were noticeable in the collection under review.



Champion Galloway Cow, Iowa State Fair and Exposition, 1908.

Standard favorite was the bull of the show, heading his class and going straight to the championship. He shows improvement over his last year's form. He is liberally fleshed and is a good type. Captain 4th of Tarbreoch is an even-turned smooth two-year-old that is low-set and strongly masculine. A crack yearling is Douglas of Meadow Lawn, compact, large, of girth for his age and neatly finished. Billy Bryan is an excellent type, but lacks flesh. Scottish Pride, smooth and even in his milk fat, is a comely youngster.

Evaline 2d of Avondale is a grand old cow. She is an experienced showyard winner. Although past six years of age, she still holds intact of her old-time charms and was in the judge's opinion the best female in the show. Galloway matrons have been a strong class at many of the fairs for some years, and this distinguished cow has figured conspicuously in the contests. Sadie of Meadow Lawn is not so large nor so sweetly feminine, but she is smoother and more compact. Lady Graceful is a beautiful pattern and was presented in arresting form.

THE POLLED DURHAMS.

Polled Durhams have made good the claims of their friends in Iowa who secured a classification for them in the Iowa State Fair premium list two years ago. Hawkeye breeders and several from other states have responded to the invitation, and this year one of the most satisfactory shows of the breed was given. There is no longer any question as to the advisability of continuing a classification for this hornless type of Shorthorn. It is making friends in Iowa and elsewhere, as attested by the increasing strength of its displays at the fairs. Moreover, Polled Durhams are improving in those qualities which are of the largest value to the beef cattle grower. Some of the entries forward lacked condition, some would not make a first-class impression with any sort of fitting, but the bulk of the cattle were in creditable fix, and some of them were of outstanding character.

Roan Hero and Royal Flora repeated last year's trick by gaining the two championships. This was their achievement at Des Moines and at the International last year. Here is a pair that fill the eye. The bull has held his form better than the matron. Considering their age, both are extraordinarily smooth and fresh. In type they illustrate with much fidelity the ideals aimed at by Polled Durham breeders. Amity Bruce is a very good two-year-old. He stands on short pegs and is level and deep, with ample spring of rib. Cupbearer is a remarkably growthy, blocky one, with quality and character to satisfy the most critical. Bull calves made a beautiful exhibit, Buttonwood Tip 5th, a clever roan, heading the class.

Considering the number of entries, the aged cows made as creditable a showing as any breed on the grounds. The two-year-old heifers were a strong ring, and Mr. Hadley's capital daughter of Buttonwood Marshall 5th, Buttonwood Duchess, was at once elevated to the leading position. In form and finish she is a study. The yearling heifers were the high spot of the show. Two beautiful lassies were rated first and second. Buttonwood Maud and Buttonwood Jenny Lind 4th, half-sisters, are a sweet pair, and please the eye from any angle. Another pair from the same herd of outstanding excellence in make-up and finish led the heifer calves.

THE RED POLLS.

The largest and strongest show of Red Polls ever seen at a state fair attracted its full share of attention, and the careful, intelligent work of the judge, J. W. Martin, Gotham, Wis., was helpful to exhibitors and others who followed it. The cattle were judged on the dual-purpose basis, and the job was well done. While many admirable show types were forward, there was a considerable sprinkling of entries which lacked flesh to such an extent that they should humiliate an exhibitor. This has been the case for years in this breed. At one end of the big class stands a high-class animal in attractive bloom, worthy of the place it occupies, while at the other end stands a "skate." It is unfortunate for the breed that where there is so much good wheat there should be so much chaff.

In aged bulls, Cremo demanded that his smoke be watched. He is a smooth low-set bull of scale and quality. Itoo, a milk bull, topped the two-year-olds. Rutland is chock full of beef and milk quality, an excellent blend of the two virtues, and is of pleasing architecture. Bull calves were an uneven lot, owing to the diversity of ages represented. They should have shown in seniors and juniors, which also applies to the heifer calves. A big class of them puzzled the judge, owing to the gradations in size. Don won because of his fine balance of the qualities prized by breeders. He is a quality sort of ample size. He is well grown.

Inez is a type to imitate. She has reached the matron class a stronger candidate than when she headed the two-year-olds last year and gained the female championship of the breed. She is a genuine double-decker, short, smooth, even-lined, large of barrel and admirably equipped with milking parts. Lady was a popular winner among the two-year-olds, a very sweet robust heifer with well-defined veins and a fair udder. If the yearlings had been divided into senior and juniors the exhibitors would have better satisfied and so would the judge. The class was large and rich in top-notch show material. Lena made an appropriate headpiece. Her sweetness of character and symmetry made her invincible. The calves were a big class, with more than enough good ones to take the prizes.

THE FAT STEERS.

Marked improvement in the quality of the pure-bred fat cattle exhibit was noted in all the breeds represented, although the number shown was about the same as a year ago. Short-horns made a particularly impressive display, while the Angus came fully up to their usual high standard, this breed furnishing the grand champion of the show in Edison, a prime bullock that is full of meat. The grand champion group also was "black." The steers were judged by the breed judges in each breed and they worked together on the championship—Prof. H. W. Mumford, E. T. Davis and Capt. T. E. Robson. In the grand championship contest the tug of war was between the Angus Edison and the roan Short-horn Look Me Over. But for a little softness of flesh the latter would have won.

THE JERSEYS.

Represented by about the usual number of breeders but of more than average showyard excellence, the Jerseys scored high in the strong list of bovine attractions. The classes were small and the prizewinners were qualified for much stouter competition than they encountered. With but few exceptions they showed that beauty of finish which makes potent appeal to students of the breeder's art, and in their combined strength made a magnificent display of the breed's popular points. Prof. Hugh G. Van Pelt of the Iowa Agricultural College, Ames, Ia., assigned positions, and more acceptable work is rarely witnessed, barring his attempt to mix prophecy with judgment in sending the female championship to a yearling not yet freshened. It is of historical interest to record that in this breed, as well as in Holstein-Freiesians and other dairy races, many of the entries, especially in the cow classes, showed without horns. Working dairy cows do not need these weapons of defense and offense under modern conditions, and the growing practice among breeders and dairymen of removing them does not render dehorned specimens any the less attractive to judges who consider the practical side. A pair of polished horns, prettily set, complete a typical head, but they do not spell dairy efficiency.

Zelaya's Fancy Lad, now nearly six years old, is as flash and stylish as he was last season, and no one questioned his leadership in the aged bulls, but the yearling Stockwell's Giltedge, thoroughly good at every point which makes for practical value, had popular license to defeat him for the championship. As a breeder's type this young bull fills the requirements. Another one of much the same stamp headed the calves.

Morey's Golden Lass, a sweet matron of type and strong in dairy equipment, was a handy winner among the cows. Three dehorned entries in the ring of six two-year-olds gained places. The yearlings in milk were a clean quality lot. In the dry yearlings the judge found the champion female, Jolly Sweet Thing 2d, a half-sister to the champion bull and as complimentary to her sex as he is to his.

THE HOLSTEIN-FRIESIANS.

Competition among Holstein Friesians was mainly between two herds. Prof. Van Pelt distributed prizes. The older rings were stronger than usual. Most of the entries were nicely fitted. Kaan Jewell of Woodlake did well to get ahead of Ethel Alexanders 2nd's Sir Netherland in the aged bull class. The latter is not showing in as good form as usual. Both are big rugged bulls. The first named gained the championship without much hindrance. In aged cows, the good old matron Maryka 3d's Gerben 4th, with a typical Holstein udder, and carrying a deal of bloom for one of her years, was an easy winner. She won the championship as easily. She is a great dairy cow and a capital type of the breed. Heifer calves were a better class than the bull calves.

IN THE HORSE SECTION.

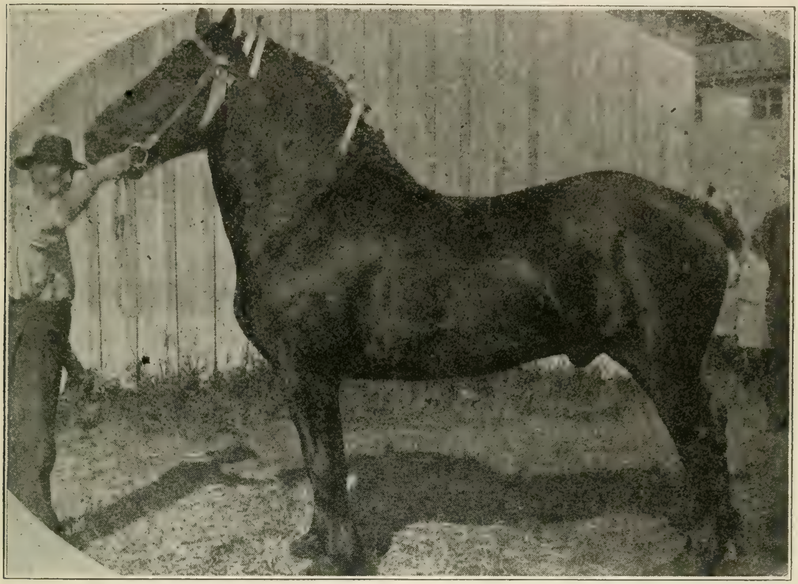
The impressive statistics of this division are presented in our introductory comments. The interest of farmers in this state in the production of market horses has waxed with the years, until the industry has assumed large proportions. Some of the best-known importers have long been bringing valuable sires to this state, and it has been a remunerative market for many other stables. For years at this fair striking displays of horses, especially in the draft classes, have been made, and the exhibit last week awakened the keenest interest. It was noteworthy in the emphasis it laid on the success which attends the production of superior draft horses in this country. The classes for American-bred horses were well filled with creditable exhibits for the most part. Altogether this department contributed greatly to the outstanding success of the fair.

THE PERCHERONS.

Clearly dominant in the equine interest of the Iowa farmer is the Percheron, as repeatedly evinced by the exhibits on these grounds. The list of exhibitors contained numbers of Iowans who are undertaking the production of breeding stock in a comparatively small way, laying the foundation for a future development which can not prove otherwise than remunerative in high degree. Awards were made in this breed by Alexander Galbraith, Janesville, Wis., and Prof. W. J. Kennedy, Ames, Ia.

The ring of twenty-three aged stallions presented a lot of weighty ones of strong excellence, although not containing sensational horses. Only a few of the lighter sort were present, most of them dropping naturally into the real drafter class. So uniform were they that they gave the judges some little difficulty in assorting them. These experienced men were a little critical, especially as regards feet and legs, which accounts for some decisions which were not just approved on the outside. The winner was found among the Singmaster entries, in the black Aurele, quite a "classy" horse, with toppy crest and impressive presence, a level well ribbed black and the cleanest of legs. Much more bone was carried by Decime, that was placed second, and this very rugged horse promises to come into quite a prominent winner. At present he is the embodiment of power at draft. The gray Bonpays is a great-bodied horse, better in his top than in his underpinning, with a character and a presence and a bulk that make him very popular with farmers. Alban was another toppy one, a black again, as were most of them throughout the stallion classes, and he was able to make a fine show at the leading rein. Prosperity is a level-topped gray with particularly attractive fashioning of hind quarter.

Nearly a score of three-year-olds presented one of the problems of the week, the rub finally occurring between the black American-bred Brilliant D. and the imported gray Trochu. The talent called it a nip and tuck fight, but the all round excellence of Brilliant D., a really remarkable stallion in many ways, with capital legs and feet and finely turned body, carried the day and he eventually became champion. Trochu was the better horse at this time in the middle piece. His companion Abatvent made with him a strong pair to come from one stable. Closier is a real stocky-built stallion, of much draft power. Loulaba is a dazzling dapple gray, a real eye-catcher, and stands on the best of legs. These horses were a very mature lot of three-year-olds from start to finish, but the official veterinarian was not able to send any of them out of the class after a careful mouthing of the contestants.



First Prize Three Year Old Percheron Stallion, Iowa State Fair and Exposition, 1908.

The thirty two-year-olds made one of the most notable collections of that age that the breed has ever presented. They were very well grown—so well that one of them was excused by the vet after he had examined the mouths of all of them—and for the most part they were in prime condition. When the yearlings came forward not only the vet but the registration certificates of the massive colts that were eventually placed first and second were called for, but the record in both cases appeared straight and they were certainly entitled to their places on the prize list. Blodin is an altogether good one, and Harcourt is not far behind him.

The mares made a class of twenty-three, which tells tremendously of the development of the breeding business in this country. They were headed by Castille, the roan which won at Chicago last fall, and which is heavier than ever. The big and showy Soubrette, a flash dapple-gray, stood second and the handsome black Iolanthe, a last year's champion and in better form than ever, was third. The entire lot of females presented most gratifying evidence of progress in the work of producing on this side the water the sires needed for our market stock.

THE SHIRES.

The Shire horses were capitally represented in numbers and in quality. We have had occasion in times past to commend importers for the discrimination with which they have chosen stallions for our farmers, in that they have avoided the old-fashioned coarse-jointed harsh-haired kind, and sought those whose quality of bone and feather represent modern ideas. A repetition of that commendation is again in order. Very little suggestion of the undesirable sorts were seen, and yet bulk in plenty was presented. Nine aged stallions came under W. E. Pritchard, Ottawa, Ill., as judge, and he was critical to an extent that disappointed some onlookers as well as exhibitors, but with bulk he demands soundness and wearing qualities of foot. He got a real toppy one with a deal of substance at the head of the lot in the bay Waresley Defiance, and while Bury Radium is scarcely on the same scale he is yet a real draft horse and of such character and quality, as revealed in head, ear, eye, legs and bearing, that he ranks high as a sire of valuable geldings. Moulton Florizel is big and stocky with strong stifles. The three-year-olds revealed capital quality, and it was typified in high degree in the winner Ashwell Besswood, a colt of the rarest excellence of bone, foot and feather. That he should have stood above Shelford Friar was by no means conceded, as the latter is much better built on the rump and back and about as free from criticism of foot, leg and hair as you can find them. He is a grand colt top and bottom. His stable companion Bury Magnet is splendidly modeled in body, with breadth of frame, depth of rib and grand hind quarters, but is not so choice in his legs and feather. Blaisdon Cardon, a big and toppy colt, made a fine performance at the halter. There could be no denying premier honors to the blue roan two-year-old Bradgate Blue Jacket, as he is made after the modern pattern and turned out about proper. He is a colt of fine finish and much promise. Among the dozen forward were a few that did not lend especial credit to the breed, but the prizewinners were of good class. Finstall Triumph was perhaps the most massive colt in the company, and of nice quality but not so nimble on his feet as those ahead of him.

THE BELGIANS.

Again note must be made of a large and admirable exhibit of Belgians. There was very little trash among them from first to last. Evidently importers have picked with discrimination as to soundness and quality, and it deserves record that among the older stallions the larger draftier type was chiefly in evidence. The smaller sort, which finds some favor in Belgium, is not so desirable for our purposes. R. B. Ogilvie, Secretary of the American Clydesdale Association, Chicago, allotted positions in this breed and sent onto the list a very uniform type, chosen closely to his standard. The leader in the aged stallions was the burly bulky Parfait Pruyer, a real draft sort with a most engaging walk. Martin du Hayoir is a great-middled bigended bay of wearing quality, and the chestnut Major's Tugel represents capitally the drafty type of the breed. The three-year-olds were a uniform company of pleasing character, eleven of them, and hardly one among them that would not prove a ready seller. The winner Martin is a shapely bulky chestnut and the others below him were of acceptable type. A little variation in type appeared among the two-year-olds, as a few were on the order of the "Dutchman's" horse, while others had more scale and would mature into larger, if not more weighty,horses. Paul de Roe is a very light roan of very impressive character and a great lot of substance, carried in shapely form.

THE CLYDESDALE.

Larger and more impressive exhibits of this breed have been seen in this pavilion, but quite a number of them were newly over. Indeed, the horses from the stables of Alexander Galbraith & Son, which won leading honors, were barely landed, and moreover did not represent the choice of the importation, which had been entered for the show. The troubles of shipment incapacitated for the time a number of their best show horses, so that substitutions were made at the last moment, by consent of the fair managers. The winner of last year, Baron Clifton, again headed his class and his companions are useful horses, but somewhat wanting in condition. The three-year-olds revealed little fitting, but throughout the exhibit the prime excellence of foot and pasterns was almost uniformly illustrated. A few rather plain heads were to be noted, and on the whole under the handicap of recent importation the Clydesdales were not so impressive in their exhibit as the other breeds.

THE HACKNEYS.

It looks a little odd to see the Hackney Ponies in competition with the horses, and yet the classification at our western shows, which take no note of height, permit this mix-up. No little interest attached to the exhibit of this breed as it presented a number of high-class animals. Meanwood Majesty and Prickwillow Connaught had a sharp conflict before William Marshall of Tichenor & Co., Chicago, for honors in the stallion class, and these two famous prize-winners were on their metal in capital fashion. The decision finally fell to the Pabst representative, and the sensational pony Dillham Prime Minister was third. The youngsters were not great, but the mare ring presented the famous champion Elegance 2d which has long been a familiar and dazzling figure at eastern shows and is still in fine fettle. All three prizes among the mares fell to Pabst entries.

Entries of saddle-bred horses were drawn from Missouri, Kansas and Illinois as well as Iowa, and some showings were made that greatly interested the people. Alexander Jester was the winning stallion, defeating the more masculine but rather coarser Forest Rose, under the judgment of R. E. Jones, Webster City, Ia. Tom Bass rode a handsome chestnut gelding named King to victory in the gelding class, although he wants a little more education in mouth and manners, and this flash-going gelding was finally made champion.

THE ROADSTERS.

The roadsters both pairs and singles made a specially strong showing. In these classes conformation counted for 60 per cent, manners 25 per cent and appointments 15 per cent. The fact that appointments received attention operated strongly against some exhibitors, for the horses were shown by some attached to road carts, others to sulkies, but the most of them were to road wagons with appropriate harness. In the class of pairs Winchester Stock Farm had a well matched pair of blacks that could show considerable speed. They were in good style, shapeliness and speed. The second place pair were shown by Chas. C. Judy of Illinois. They were not nearly so evenly mated as the first pair, but were shapely, with a nice way of going. Tom Bass secured third place with a pair of chestnuts, one being the mare that led her class in the standard-breds. Her mate was not of equal merit.

In single drivers Tom Bass secured first with his chestnut mare. While it was very close between his mare and that of Mr. Judy the matter of appointments threw the outcome decidedly in favor of the mare. The Winchester Stock Farm had likely more speed than any of them, but not quite as nice a way of going as the other two. The three of them made a capital showing. The mare shown by Tom Bass has enough substance to guarantee durability, while she is smooth and well proportioned, but she falls away from the Judy entry when quality is considered. These two entries were notable in the degree to which they combined speed with a high order of road action.

SHETLAND PONIES.

The state, and probably the West, never witnessed such an outpouring of ponies. Last year numbers were strong, so strong as to occasion comment, but this time they came even more numerously and in far better quality. C. E. Bunn journeyed out to test the metal of the Iowa ponies, and while he made his accustomed record he yet found stout competition. Prof. John A. Craig, San Antonio, Tex., tied the ribbons with discrimination, although the aged mare award might readily enough be overturned, and a slight misunderstanding of the conditions in the saddle class let a pony go to the front that is not especially typical of Shetland size and form. The ponies in harness made a brilliant exhibit, no less than fourteen pairs coming into the arena and a quartette of four-in-hands were forward. The Shetland Pony exhibit classed among the sensational features of the fair.

PONIES OTHER THAN SHETLAND.

The ponies other than Shetlands came out very strong, Chas. E. Bunn, Peoria, Ill., and the Pabst Stock Farm, Oconomowoc, Wis., making the main showing with Hackney ponies. In the class for ponies in harness the entry of Mr. Bunn was placed first. With such finish, style, smoothness and substance, combined with correct harness action and manners, this entry is hard to beat. The Pabst entry posseses unusual quality and attractiveness in addition to good action and perhaps in step could lead the other, but fast or slow the Bunn entry could show many a big Hackney the correct way of doing it. In pairs Mr. Bunn showed two, the winners being beautifully matched in type, with such a similarity of action and manners as to make them almost perfect as a pair.

The class for ponies under saddle brought out a remarkable pony from the Pabst stable. Perfect in type with the manners that could not be excelled, this pony showed correct gaits and splendid education. While the representative from Mr. Bunn's stable was an unusually attractive pony standing or in action, yet the winner was of exceptional merit.

IN THE SWINE PENS.

Quality is the goal at which the swine department officials are aiming. They have had numbers in which quality did not measure up to a satisfactory standard. For years the number of entries has been overwhelming in its magnitude and more or less disappointing in the average of its excellence. With no restrictions to limit them, exhibtors were in the habit of entering two or three pigs to show and 30 to 40 to sell. Instead of making the fair memorable for its competitions in the prize ring they converted it into a sort of clearance house. But this abuse of the swine department served one good purpose at least: it emphasized the necessity of larger and better accomodations for housing and showing hogs, and the result is the magnificent new pavilion, built last year. Now that some restrictions as to the number of entries that any one exhibitor may make have been imposed by the management in the interest of the show, a betterment in quality is sure to materialize. In fact, the exhibit this year showed higher average merit than any former display. A new rule reads that no exhibitor shall have more than ten pens in the building and not more than two of these can be used for pigs under six months. Altogether over 2,500 hogs were shown by 211 exhibtors from seven different states. It was chiefly a breeder's show, and Iowa furnished the bulk of the entries. For the most part the hogs were in attractive fix. The judging was performed amid difficulties which should be eliminated. Since there are no seats around the pavilion onlookers stood inside the arena, so that when a large class was under review it was a physical hardship for the judge to make his way among the people, the hurdles and the hogs. He ougth to have more room.

Berkshires made a thoroughly creditable show, N. H. Gentry, Sedalia, Mo.,making the awards. About 200 were exhibited, with only one herd from outside the state. Very few mediocre entries were seen. Ten breeders were reprsented in the showing and the ribbons were fairly well divided, indicating uniformity of type. Especially good were the pigs. It was an altogether toppy pair that received the championships. Most of the entries were nicely fitted. McPherson won the silver cup offered by the American Berkshire Association for the best young herd bred by an Iowa exhibitor.

Poland-China classes were strong from start to finish. In some of the aged rings only a few were shown, but the quality was top-notch, and it took the judge, L. H. Roberts, Paton, Ia., two days to make the awards. The type selected to head the classes was generally very satisfactory to lovers of the medium-sized hog which showed lots of quality, width of back and depth of ham. It was anybody's ribbon in a good many of the classes, and in aged sows when the first three were finally brought side by side for further comparison the ringside was unable to tell which was the head end of the line. Burroughs' junior yearling boar annexed the championship ribbon, defeating Francis & Sons' aged board. The ribbons were divided among a good many breeders, with Winn, Chiles, Burroughs, Francis & Sons, Walgamuth and Wellington sharing the best ones.

More Duroc-Jerseys than of any other breed were seen at this fair. Eighty-nine breeders brought out 896 entries to compete for honors, and 79 of these live in Iowa, while the rest came from South Dakota and Kentucky. Iowa breeders gathered in most of the ribbons. The classes were large, over 50 coming out in the junior boar class. So many hogs scattered promiscuously through a large crowd in the ring made the judging very difficult. N. H. Gentry, Sedalia, Mo.. tied the ribbons. In giving Model Chief 2d the championship he picked a capital representative of the breed.

Chester Whites numbered 442 animals shown by 35 exhibitors. They were unsurpassed in quality by any other breed. Several breeders, now in the ring, chose Iowa for their initiation into the State Fair circuit. The strongest competition was between Reese and Leavens, with the latter rather ahead, finally taking three championships and leaving only the boar championship to Reese. The breed made a very strong show. W. Z. Swallow, Waukee, Iowa, awarded the prizes.

Hampshires made the strongest show in the history of the white-belted breed. Eight exhibitors contributed the entries. Prof. J. J. Ferguson, with Swift & Co., Chicago, assigned the positions. Outstanding showyard character, distinguished the winners in every class, and the champions were real fancy ones.

In point of numbers the show of bacon breeds is of minor importance, yet 115 Tamworths and Large Yorkshires were entered, and among them were animals which the judge, Prof. J. J. Ferguson, pronounced as good as the breeds afford. According to students of the industry Iowa will never produce many bacon hogs until the packers are willing to pay a premium on them sufficient to justify their production. It is further argued that the feed grown in Iowa produce lard hogs cheaply, and if the bacon breeds are fed the same kind of feed only a few generations will be necessary to turn them into fatbacks. The crossing of Tamworths on lard types, however, is becoming popular in some sections, and the pigs thus raised are prime favorites with the packers. They make good killers.

THE SHEEP SHOW.

Twenty-six exhibitors from eight different states, bringing in all 640 sheep, made the exhibition the largest and truly the best dsplay of sheep ever seen in Iowa. While the accommodations for sheep are limited, fair treatment and a liking for keen and worthy competition brought to Des Moines the strongest importers and breeders of the Middle West with the best they have been able to produce and to wrest from Old Country shepherds. In all ten breeds were represented, but outside of the Shropshires, Oxfords, Cheviots, Lincolns and Rambouillets, there was very little competition.

Shropshires made by far the strongest show. Three money prizes for American-bred sheep and seven ribbons for Iowa-bred stock, in addition to the open class premiums, brought out a great many of the less prominent breeders. These American-bred rings while showing very markedly the lack of proper and sufficient preparation yet greatly excelled those same classes of previous years, especially in the ewe classes. The open classes were practically all won by imported stock. The aged ram class was well filled with very strong individuals. A ram of unusual individuality and masculinity with wonderful constitution, back, loin and leg, which to the ringside looked good for first place, finally stood second to a very typey, thick one that walked with more freedom and grace. The yearling ram which afterward was made champion showed splendid type throughout and in thickness of firm flesh was almost ideal; in wool, however, he was somewhat coarse, though densely covered. Type and character in the head, shortness of leg and depth of body placed an excellent ewe of McKerrow's at the head of the aged class. In the various yearling ewes the pick of the display presented itself in Chandler's first prize and champion winner. Seldom has the purple been tied on a more acceptable type of Shropshire. She stands four square, with a sweet well covered head, a very smooth, broad, compact shoulder and a depth of firm flesh everywhere that is wonderful. She was in beautiful fix and a delight to every lover of Shropshires.

In Oxfords competition was not keen, but splendid specimens of the breed gained the coveted positions. Depth, compactness, shortness of leg, flesh and a uniformity that should delight every true breeder's heart were shown in the rings of this breed.

Although only two breeders presented Cheviots the display was a splendid one for the breed and these compact meat-laden little sheep with their long wool and alert clean faces won the admiration of the onlookers.

Only three contestants were forward in the Rambouillet class. These were Moore, of Michigan; Uriah Cook & Sons, of Ohio; and Robt. Taylor of Nebraska. The exhibit comprised only 35 head all told, but the animals were high class. The largest winnings went to Mr. Moore's flock, which had in it the champion ram and ewe. Both were aged and of high merit. This flock also won the prize for best pen, but the other contestants also won good money.

The two Delaine flocks in the contest came respectively from Mr. Moore and Messrs. Cook & Son. The latter won considerably the larger share of the honors. The champions of both sexes were in this exhibit. They were two years old and of prime quality. No American Merinos were on the ground.

FARM BOYS' JUDGING CONTEST.

The boys' judging contest, conducted by Prof. J. A. McLean of the Iowa Agricultural College, developed the fact that the farm boys of Iowa are well versed in stock judging. There were over 30 contestants and all were under 21 years of age. The contest provided for points on judging two classes each of horses, cattle, hogs and corn, and in addition a first, second and third prize was given for the best ear of corn furnished by the contestant. With the 15 points given for the best ear of corn a total of 815 points was possible. Four prizes were awarded as follows: First, $200 in cash; second, $100 in cash; third, $25 in cash; fourth, a pure bred Collie pup.

R. A. Rutledge of Fort Dodge won the first prize with a total of 496 points, M. O. Cooper was second with 483 points, I. C. Kinzer of Bangor third with 474 points and Frank Sanders of Hartley fourth with 472 points.

Farmers' Tribune, Sioux City, Iowa.

The 1908 Iowa State Fair and Exposition of live stock and agricultural products has passed into history. It was a great show—a magnificent exhibition—magnificent in proportions, in quality of exhibits and in the manner in which it was managed. It was a show that reflected great credit on a great state—a show of which the farmers, breeders and general exhibitors were justly proud. Words of praise for the great fair and its management floating though the balmy air that prevailed through nearly the entire farm holiday period united into music of sweetest rythmic harmony and exquisite beauty that spoke of a still greater future for the State of Iowa and its great annual fair.

Only those who had attended shows of a similar nature before could fully realize the meaning of the tremendous exhibits and the uniform high quality of them all. The effect of the combined exhibts—those of the various classes of live stock, of agricultural, horticultural, culinary and art products, of useful labor saving machinery and of farm implements and vehicles of all descriptions—was such as to leave an indelible impression for good upon the minds of the 200,000 people who attended the great show. It spoke positively of Iowa's tremenduous agricultural resources. It paid a fitting tribute to the leading agricultural state in the Union and to the skill and progressive attitude of its farmer citizens. Not only could the agricultural resources of the state be seen through the great fair as a mirror, but the many manufacturing industries engaged in lessening the drudgery of the farm were equally in evidence with the latest and most efficient farm implements and machinery in the world.

It spoke of the wisdom of the state in treating its fair liberally and pointed to the future with a suggestion of the need of still larger appropriations to accommodate more and bigger exhibits and to encourage, if possible, still greater excellence. It emphasizes the fact that the modern state has spent about $159,0000 on its fair, while during the same period the fair itself has put over $161,000 of net receipts into permanent improvements, making a total of over $320,000. This is a large sum of money, but it is only a small amount for a state with the resources of Iowa. It will pay the state well to be more liberal in the future. The building of the Iowa State Fair has just begun; the work of construction must go on, and it should continue more rapidly in the future than it has in the past. A new grandstand is a necessity for the coming year. The old wooden structure is inadequate to take care of the crowds, and what is of still greater consequence, it is no longer safe. The day of wooden public structures has passed; steel, cement and brick are needed to make a safe grandstand large enough to accommodate at least 20,000 people. Such a building will cost close to $150,000, which would still be $75,000 less than the Canadian Fair at Toronto paid for its grandstand. More land is also needed; at least 20 acres should be added to the grounds to partly prevent the present congested conditions that prevail. This would probably cost in the neighborhood of $10,000.

The net earnings of this year's fair, which will be in the neighborhod of $43,000, could be used to good advantage for finishing the new Administration building and for providing for other needed improvements in the way of buildings, walks and better sanitary facilites. Every dollar the state may see fit to add to the well started nucleus now on the grounds will be money well invested—money that will pay big dividends in the form of increased returns from the farms of the state and thus aid in augmenting general agricultural progress.

A great fair that is well managed is truly educational. It impresses the young, teaches and inspires the old and uplifts and enthuses the great body agricultural to an extent that can not be measured in dollars and cents. Nor is this all. It has a tremendous moral effect on the whole state, which manifests itself in a stronger and more determined effort on the part of the ambitious to strive for higher ideals and greater excellence. The average man of the rural districts needs to attend a great fair at least once a year; he needs to come in contact with the leaders in his line of work in order to have his latent powers stirred into action. His brain needs a stimulant such as is furnished by seeing what those who, perhaps under more favorable conditions, have succeeded in accomplishing.

For these and other reasons farmers should see to it that the legislature treates them liberally next year in the way of big appropriations for their greatest educator—the state fair.

HORSES.

The horse show was large—larger than any previous shows made in Iowa, and we believe it is entirely safe to say, in the world. Think of an exhibition comprising 800 magnificent equines! Where and when has it been equaled? It was not only a great show numerically, but it was a superb show from a quality standpoint. It taught an impressive lesson of the tremendous advancement that has been made in developing that noble, useful and faithful friend of man, the horse. It seemed to say emphatically, though modestly, that man is trying to show his appreciation of the valuable services rendered him by the great equine race by helping to develop and improve its physical beauty as well as its mental capacity, for the impressive array of splendid steeds seemed to have greater mental powers than their progenitors. They are certainly intelligent.

While it may be said that there was general satisfaction among the horsemen with the manner in which the judging was conducted, there were a few things that might have been done in a somewhat different way and thus have made the show a great deal better from an educational point of view. Among these things was one that was evident even to the most casual observer. The world has been taught by experience that there is something of value in the purity of blood in our pure-bred breeds of live stock and it has learned to prize a stallion, a mare, a bull, a cow, or any other breeding animal not merely because of its individual merit but also, and very largely, because of the performance records of its ancestors. This is why breed records have been established and why an animal with a pedigree is considered more valuable for breeding purposes than one whose ancestors are unknown. Breed character, in other words, has come to mean something.

It was evident to all who know anything about the different breeds of horses that there was a certain animal in the show ring which gave very little individual evidence of belonging to the breed with which it was shown. So much did it resemble another breed that had it been classed with the one it resembled most, its relationship would probably never have been questioned. While the horse referred to was possessed of individual excellence it had but few characters common to the breed with which it was classified, and it seems as though it should have been ruled out of that breed. If a century of breeding does not stand for breed character what does it represent?

CATTLE.

The cattle show as a whole was larger and better than that of last year. There were in the neighborhood of 800 on the grounds. The Short-horns did not make so large a showing as usual, but the quality was fully up to the standard of previous years. The high price of grains and the slight depression in the live stock trade that has prevailed for a few months perhaps caused the falling off of the popular Short-horns in the show ring, of which there were 189 in the breeding classes. None of the classes were very large, nevertheless they were strong. The Hereford breeders, who for several years have been pushing their cattle to the front, were decidedly in evidence with their favorites this year. No less than 169 "white faced" breeding cattle were at the show and a magnificent lot they were! They truly made a fine appearance, some of the classes having as many as 25 or 30 head. The exhibtor's herd, breeder's herd, calf herd, get of sire and produce of cow classes were very large and made the biggest show of "white faces" that has ever been seen in the ring at the Iowa State Fair. The Angus breed was represented by 91 head of breeding stock and it was a general ringside remark that the quality of the "Doddies" was first-class and the show as a whole of superior excellence. The number was about the same as last year. The Red Poll show was larger than last year, 83 head being entered. The Polled Durhams, Galloways, Jerseys and Holsteins were represented by 55, 40, 45 and 43 head, respectively.

SWINE.

The great swine pavilion, as last year, was filled to overflowing. The only reason there were not 6,000 hogs in the pavilion was because it will accommodate only one-half that number. Pen room was all spoken for as early as June 15th. It is questionable if accommodations sufficiently large to accommodate all the breeders who wish to send hogs to the show could be provided on the grounds. The Duroc breed made the largest showing, and for the first time placed the Poland-Chinas second from a standpoint of numbers. The former was represented by 898 and the latter by 850 individuals. The Chester White breed made a very good showing, as did also the Berkshires. The Tamworth breed, which is gradually becoming more popular in some sections, was well represented from a quality standpoint and it apparently won many new friends among farmers in attendance.

FARM MACHINERY.

The farm machinery display was so large that it is impossible in an article of this kind to give anyone an adequate idea of its magnitude. There were no less than 400 machinery exhibtors on the grounds. Several big steam plows were operated on the grounds every afternoon. Four silos were to be seen in which apparently many farmers took great interest. Silage cutters were also in operation, which cut and elevated the corn into one of these structures. There were no less than 150 different makes of gasoline engines on the grounds, showing that these machines are becoming more and more popular for farm use. Binding twine was being made by machinery, a process in which many were greatly interested. Among the comparatively new features were up-to-date lighting and the heating plants for farm homes, testifying to the rapid advancement that is being made by the farmer in the way of improvements that go to make life more pleasant in the rural districts. Nor was the automobile absent. Manufacturers of autos spoke freely of the large number of machines they have been selling to farmers during the last few years; in fact many farmers came to the fair in automobiles.

A new and improved combined corn cutter and husker was on exhibition. This machine cuts, husks and elevates corn into a wagon box all in one operation. Whether this machine will prove to be practical remains to be seen. It is probable that it will have to be considerably improved before it will come into general use. Besides, there is one thing strongly against its efficiency and that is that it wastes the cornstalks. While it is true that the great bulk of cornstalks, perhaps 90 per cent, are wasted today, and while as Secretary Wilson said in one of his speeches on the ground, that the Iowa farmer can afford to waste part of his corn crop, it is not likely that the thrifty farmer will do this when he has to operate on $100 or $150 an acre land.

Considerable interest was manifested in an Iowa-made milking machine which was operated twice a day on the grounds throughout the entire week. It was run by a gasoline engine and apparently did its work of drawing the milk from the cows as well as anyone could do it by hand.

EDUCATIONAL FEATURES.

The Iowa State College had a very fine exhibit in the old Administration building. One thing in which many farmers took a great deal of interest was a collection of mounted specimens of common weeds and grasses, together with small samples of seeds of each variety. The Extension Department of the college has been devoting a great deal of time and effort to making collections of this kind during the last summer as well as collections of the common insects, showing them in their different stages of development. These collections will be for sale to schools teaching agriculture and will also be supplied at cost to all agricultural clubs and societies that may wish them. A few collections, we understand, can be furnished to private parties.

A minature cement silo was also exhibited by the college, and directions for constructing silos of cement were given. It was claimed by those in charge of this exhibit that a cement silo can be constructed at a cost not to exceed 25 per cent in excess of the cost of wooden structures, and it was suggested that wherever sand and gravel can be easily secured cement silos will be much cheaper in the end than wooden structures.

The soils department of the college showed in a very striking manner a county map of the state by means of the principal grains and grasses grown. It was evident from this that the area devoted to clover in Iowa is exceedingly small as compared with the area devoted to corn and other crops. Thus for every acre devoted to clover in Iowa 16 are devoted to timothy and 46 to corn production.

Many important educational meetings were held on the grounds and plans were made for introducing agriculture into rural schools. Secretary of Agriculture, James Wilson, made several addresses, in one of which he said that he would never recommend that the federal government give financial aid for the introduction of agriculture into the public schools until the states provide teachers competent to teach agriculture. The secretary urged the importance of eradicating bovine tuberculosis from the herds in the state and was in favor of the enactment of laws to that end. It was also his opinion that the state should partially compensate farmers and breeders for any financial loss they may sustain in cleaning up their herds. He called attention to the tremendous waste that is going on on the average Iowa farm and urged farmers to take steps to save the cornstalks, of which he estimated that 90 per cent are practically entirely wasted. While he was looking forward to a big crop of corn this year, he advised farmers, especially those in the northern part of the state, to grow early maturing varieties and to pay more attention to early maturing qualities than to the size of the ears, as it is the ripe corn that counts.

Reference was also made to the importance of tiling and of getting every acre of land in condition to produce crops so as to be able to secure good yields not only in a dry, but also in a wet season.

Twentieth Century Farmer, Omaha, Nebraska.

THE IOWA STATE FAIR SHOWS THE TREMENDOUS RESOURSES OF THIS GREAT COMMONWEALTH.

Iowa is indeed a great state. Never before has it given so pronounced a demonstration of its real greatness in its agricultural and industrial resources as was displayed at its recent State Fair held at Des Moines August 23 to 28, 1908. This annual exhibition of the Iowa State Fair is only the presentation of the evidence establishing the fact that this great commonwealth is on the highway to a still greater degree of success and achievements in agricultural prosperity than has heretofore existed. Each year sees this great agricultural enterprise climb higher and higher in the scale of exhibition achievements.

The Iowa State Fair is the exponent of a great agricultural state, whose resources are primarily the soil and the products thereof. The man behind the plow and the boy upon the cultivator have been the prime factors in building up the conditions which today assert the greatness and grandeur of this highly prosperous and wealthy district of country. Iowa has developed in recent years with astonishing rapidity in every feature of farm and land improvement, production and enterprise. Almost from the beginning of settlement on the prairie lands of Iowa it acquired the distinction of being the corn country. It has also gradually developed into a clover, timothy and blue grass country, until today it is the greatest combined corn and tame grass district in the United States.

Iowa is great in its live stock industries and interests. It is the great center of live stock improvement. No state, district or section of country of equal area is displaying more activity, energy and real breeding enterprise than is found in Iowa. Thus the Iowa State Fair has behind it the backing for the greatest live stock show in the country. Its large and spacious grounds, its greatest hog barn in the world and its live stock pavilion, where seven breeds of cattle were congregated at one time in classification, being passed on by the judges of these several breeds, gives some idea of how the fair management is trying to keep pace with the development of the farm and state.

The 1908 fair was in all respects an advancement over last year and all fairs that have gone before. State fair officials expressed an opinion that all departments were increased this year over last by 10 to 50 per cent in extent.

THE RIGHT MAN IN THE PLACE.

President Cameron, the genial and courteous official of the Iowa State Fair, who has a smile and pleasant greeting for all callers, even for the newspaper man, in an interview concerning the fair in general, said:

"We feel that the State Fair and the people of the state are in closer touch than ever before, that the citizens of Iowa are realizing more and more that the State Fair is really and truly an Iowa institution and that they are a part of it; that one of their first duties is to attend the fair and lend their influence to the enterprise by their attendance.

"Our people have finally acquired the State Fair habit and they come without any urging or special inducements. The great educational features of the fair are being appreciated and the progressive citizen feels that he cannot afford to stay away. Our State Fair is the greatest factor in the state in demonstrating the values of Iowa lands; each year convinces more of the fact that Iowa is a great agricultural state and that Iowa land investments cannot be bettered; that this is a good enough state to live in. 'Let well enough alone' is the motto with our best thinking people.

This fair is growing better each year. This year in all departments it exceeds last year from 10 to 50 per cent. The attendance is greater each year and in all respects we should congratulate ourselves in the success of our fair. Would be pleased at any time to give the press any assistance in my official capacity or personal attention. Good day, call again."

An instance in state fair history where the right man is in the right place.

GREAT LIVE STOCK SHOW.

The horse department, comprising all outside the track horses, was a matter of general remark in the excellence of quality and large numbers. In this division were 785 horses entered.

In cattle there was also great interest, there being in all breeds 627 head exhibited. There was some complaint amongst breeders on the extra expense this year in fitting cattle for the fair owing to the higher prices for feeds that had to be used in finishing the show animals. The cattle show was not only large, but it conclusively demonstrated that the breeder is getting a little nearer perfection each year. Some of the old breeders and exhibitors were not present, but their places werre filled by new recruits to the great army of cattle breeders that are constantly being added to the lists.

The swine department reached the enormous aggregate of 2,642 animals, representing all breeds common to the corn country. Experts and clever critics in hog finish detected a very perceptable lowering in condition of the hogs shown compared with former years of more bountiful feed supply, and lower prices for feed stuffs. The quality of animal was equal to the best that has ever been produced. There was not so free a buying spirit as has formerly prevailed at these fairs. This was also attributed to the prospect of at least 50-cent corn for the present undeveloped crop. As hogs and corn naturally go together, there is nothing remarkable in this evidence of caution.

NEED OF NEW SHEEP BARN.

The Iowa Sheep Breeders' Association has stimulated more interest in the sheep show and the increased attention to founding new flocks of both grade and full blood sheep is making it more of an object for breeders to exhibit than formerly and the quality was good. In many classes the competition was very close, there being present some of the best sheep in the entire country. The sales of rams were reported good by those having sales sheep with them. The Iowa State Fair management will make no mistake in using a portion of its surplus before another fair season in the building of a suitable sheep barn, to house comfortably this division of its live stock show. The present accommodations are not in accord with the other departments of the fair and greatly below that of other fairs where the sheep and wool interests of the state are much below that of Iowa.

The dairy interests were particularly well represented both by the show of the dairy breeds of cattle and in the products and dairy machinery and appliances for carrying on this important branch of farm industry. Iowa is to be complimented for its very systematic and well proportioned display of dairy work. Its exhibtion of butter and designs in butter were especially interesting, both to the curious and the student. The displays at the dairy division in the agricultural hall, in all its specialties, was a good incentive to start the farmer on down the row to the cattle barn, where the specialty dairy cows were on exhibition, showing to a certainty that if butter fat is the object you need go no farther.

Horticulture, one of the most important branches of general agriculture, forms a leading feature on the Iowa farm, not that it is taken up as a particularly money-making proposition or a general ambition encouraged for commercial orcharding, but as a home necessity. The family orchard is no longer regarded in Iowa as a luxury; it is one of the necessities to good living and is as common on the farms as the garden.

The show of fruits this year is very good, fully up to the average season, though procured under a little more restriction in territory. The Des Moines valley or territory central in the Des Moines district was the only section of the state that was not seriously damaged by the frost period last spring. In the above territory there intervened a period of cloudy, moist weather following the frost, which gradually thawed out the freezing or frost influence and left the fruit unharmed; where the reverse condition of sunshine existed, the blight was fatal.

DISPLAY OF SPRAYED FRUIT.

One very remarkable display was that of F. O. Harrington of Williamsburg, Iowa, who had an educational exhibit of apples, illustrating the influence of spraying on the apple crop. Mr. Harrington's spraying consisted of four applications; the first just before the opening of the blossom, the second after the fall of the petals, the third two weeks later and the fourth and last in August. He sprays with Bordeaux mixture and insecticides for the coddling moth.

Mr. Harrington has been practicing this course of tree treatment for the last five years in his orchards, and was exhibiting about fifty varieties of apples, which were without defect or blemish. They were the very pink of perfection in fruit, and demonstrated what all orchardists can have when they put into practice Mr. Harrington's methods of treatment. He uses a gasoline power sprayer. He has fifty acres of orchard and says the commercial orchard is a success and a money maker when the spray is used.

The machinery department at this fair has developed into proportions almost incredible to the casual observer. Mr. Ledgerwood, the superintendent, estimates the actual ground space occupied with all forms of machinery and implements at forty acres, independent of the machinery halls erected by the fair association for the exhibition of machines. There are four of these large machinery buildings owned and rented by the State Fair to machine exhibitors. There are twenty-four private machinery buildings for the housing of exhibition machinery and forty acres of open ground. There is more machinery being operated on the fair grounds than formerly. The increase in small devices is a matter of great interest among machine men. It was estimated that there were fully 250 gasoline engines on exhibition; the popularity of this plan of power is urged by the exhibits that are being made.

The exhibition of bees and honey was a good presentation of the importance of this industry, and the ease with which a practically waste product may be made not only highly profitable, but a real source of livelihood to the efforts of the attentive and industrious owner of small landed possessions. The exhibit was put up in artistic style and showed the skill of the practical apiarist and bee-handler.

The boys' stock judging contest was a feature at this fair. This is not new, but was started several years ago, and is so important as a class training that the Ames college animal husbandry department has it continued. It meets the endorsement of public sentiment in Iowa and has undoubtedly resulted in making some very good judges of live stock from among these young men, whose services will be in demand soon.

The visit of Secretary James Wilson of the Department of Agriculture at the Iowa State Fair was highly appreciated by the Iowa people, and was a very proper recognition of his loyalty to his home state. Secretary Wilson has, however, grown beyond state lines in his relationship to the people of this country. He has made himself so closely related to the general agricultural interests of the whole country that he has a place in the esteem and business friendship of the agricultural classes that no other man can hope to acquire.

The topics outlined for discussion at the meeting planned for Secretary Wilson on the Iowa State Fair grounds were:

The importance of teaching agriculture in our public schools.

The correspondence school of agriculture.

The importance of organization of farmers into societies for industrial and social purposes.

Judge Deemer also took part in the discussion.

The night show and the vaudeville of the present day entertainment for the state fair has been introduced into the program of the Iowa fair and has met with the endorsement of the people. The band concert, where the highest order of musical talent is employed to entertain the fair visitors, is a feature of fair amusement that the refined and accomplished talent of the country demands, and therefore the State Fair has provided it. "There is nothing too good for the farmer," has been preached so persistently by the agricultural press that the sentiment has taken root, and the state fair managers all over the country have nothing to do but provide the best talent that the country can turn out.

The Iowa State Fair has become of national interest, and is now attracting the attention and attendance of many of the most noted agricultural and live stock characters in the country. Its extensive and well filled departments in live stock, its spacious and finely decorated grounds, its magnificence and grandeur in landscape, finish and natural scenery, with its great crowds of interested sightseers, is bound to bring it into national prominence and world-wide reputation as an agricultural enterprise worthy the consideration of the scientific representatives of every land.

CATTLE DEPARTMENT.

Secretary J. C. Simpson of the Iowa State Fair thinks it doubtful if there will be a greater state fair held in America this year than was pulled off at Des Moines last week.

Governor Packard was in charge of this department and with the aid of his efficient assistants kept things going on schedule time. There was much interest on the part of the public shown, as the great pavilion at times was crowded until standing room was at a premium during the time the judges were placing the awards and at times the crowd would take part by vigorous applause. The arena at times became too crowded for the judges by those visitors with special pass privileges, but the patient marshals good naturedly asked them to "stand back," and their commands were always promptly heeded. The forenoons were given to the horse exhibits and at 1:15 p. m. the march of cattle to the arena would begin into the formation of the various classes that were booked for the day's show. On two or three occasions the evening shades would begin to make their appearance before the judicial work docketed for the day would be completed.

The Homestead, Des Moines, Iowa.

A triumph never equaled in the annals of the Iowa State Fair and Exposition was recorded at Des Moines last week. This year's fair was the fifty-fourth annual exhibition of the kind, and not one of the fifty-three creditable fairs which preceded this one—for all Iowa fairs are creditable—approached the exposition of 1908 as an all-around exemplification of what a state fair ought to be. The probability of such a success had been foreseen; for great prosperity was known to prevail throughout the state, and the outlook for another good crop was excellent, and the railroads had wisely decided to make reduced rates for the fair; but the attendance at a state fair is largely affected by the weather and the weather is proverbially fickle, hence every friend of the fair was on nettles, so to speak, until enough fine days had passed to insure the complete and unexampled success of the fair this year.

The weather was almost as if made to order. Clear, cool and pleasant, it was delightful for the tens of thousands of visitors who flocked to the fair grounds from the beginning to the end of the great show. The fair opened on Saturday this year, a successful innovation. That day being children's day, several thousand adults were attracted to the grounds for the sake of the little ones. And the fair was complete and ready for them. Saturday, Sunday, Monday and Tuesday all broke their previous records for cash receipts. Wednesday morning opened with showers and a temporary dampening of the ardor of fair-goers; but presently the clouds lifted and the business of the fair picked up; and when the returns were all in, Wednesday was found to be a record-breaker, too, besides being made notable by the visit of Secretary Wilson and his fine address on timely agricultural topics in the big G. A. R. tent. By Thursday night the fair had beaten last year's record of cash receipts up to the same time by over $22,000 and the total receipts were already greater than from any previous Iowa State Fair in its entirety, even the great fair of 1906 being already thrown into the shade, with many thousands of dollars still to come from Friday's receipts and numerous miscellaneous sources.

And all this in a so-called panic year, with well-authenticated reports that times are really hard down east! And this great fair and exposition conducted on the highest plane as to morality; with liquor-selling and gambling and fake schemes of all kinds ruthlessly excluded from the grounds; with no train-wrecks or balloon ascensions or sensational novelties of any kind to allure those who crave mere excitement—just a great, clean, varied and overwhelming exhibit of the wholesome activities of one of the greatest of our agricultural states, managed by competent men so as to give opportunities for an energetic and intelligent and enterprising people to show what they could do.

The crowds were exceedingly well behaved. There was a noteworthy absence of the rude, the coarse, the uncouth and the unworthy, in both conduct and appearance. Everybody was well dressed and everybody looked happy and comfortable. Accidents were remarkably few. Transportation from the city to the fair grounds and return, by both the railroad and street car lines, was in the main adequate and comfortable, though at times the cars were overcrowded. The city authorities made an extraordinarily good record in holding crime in check. The citizens and the municipal government frowned upon extortion and arrests were promptly made for over-charging when reported. Every effort was made to provide good lodging places for strangers remaining in the city over night. In the streets and on the fair grounds, universal courtesy and a desire to accommodate fair visitors prevailed.

The commodious and convenient new administration building; the increased space accorded to the unparalleled horse show; the extended sidewalks; the well-kept flower-beds, and the generally improved appearance of the grounds; the dignified and attractive entertainments held in the stock pavilion and a score of new and distinctive improvements in fair management combined to give point and cogency to the remark everywhere heard that this was by all odds the best fair ever held in Iowa. There was much talk, too, about the urgent need for a great steel and concrete amphitheater as the next permanent improvement which the liberality of the State and the practical wisdom of a far-seeing management should combine to provide.

While the lateness of the season cut down to some extent the exhibit of agricultural and horticultural products, yet the character of the exhibits installed was sufficiently high to be beyond criticism. Iowa has never made a record as to the number of county exhibits made at the State Fair, though the quality of the products shown will compare favorably with those state fairs where the county exhibits are more extensive. In the northern third of the state Clayton and Cherokee counties were the only contestants, the latter installed by Victor Felter, carrying away first premium. Mr. Felter's exhibit showed rare taste in design and the high quality of grains, fruits and vegetables furnished the subject for much favorable comment. There were but two counties in the central, Polk and Delaware. The former, installed by Fred Heathershaw, of Des Moines, carrying off the prize by a score of eighty-nine out of a possible 100 points. The Delaware county exhibit was installed by Mr. L. G. Clute, who made a most excellent showing, scoring 79 out of a possible 100 points. There were three counties in the southern class, namely, Cass, which scored 85 per cent, winning first; Warren, 83 per cent, second, and Lucas third with a score of 81 per cent.

Too much praise cannot be given to the educational exhibit made by the Agricultural College. This included a model cottage in which was shown the possibilities of comfortably furnishing a four-room cottage at a minimum cost. This exhibit was certainly a study in harmony of color, convenience of arrangement and economy as applied to household affairs. It attracted no small share of attention on the part of visitors. The college exhibit included models of individul hog houses, milking machines, barn models, and an exceedingly interesting series of maps dealing specially with the rotation of crops. No part of the fair furnished a more interesting study than the minature map of the state designed to show the acreage of the most important grains grown in each county, and of course no educational exhibit would be complete in these days without a display of corn racks of the most modern type. These proved to be the center of much attraction. Farmers, on the whole, spend much time in studying these various phases of the work that is being done at the college, and not a little interest was taken in examining the weed specimens that were there shown. As a state fair is above all things an educational institution, this feature is to be most highly commended, and in our opinion it would not be unwise to even provide larger quarters for the installation each year of an exhibit of this character, with such added features as may come up from time to time.

The fair board of managers acted wisely when they outlined their musical program for this year. Something out of the ordinary was attempted and, in addition to the famous Liberati band, upwards of a score of opera singers were engaged to take part both in the daily and evening programs. So popular was this feature that not in a single instance was the amphitheater large enough to accommodate those who wished to hear the musical program; and this only brings up the old subject again,

A View in the Vegetable Department, Iowa State Fair and Exposition, 1908.

that the greatest need at the present time that confronts the management of the Iowa State Fair is a new and much larger amphitheater. We understand that it required no small outlay to secure the splendid musical talent this year, but the fair management has reason to feel that they are backed up by the citizens of the state when going ahead in this liberal handed manner. Even though the division of the crowd was made both afternoon and evening on account of the counter attraction in the stock judging pavilion, yet the crowds were too large to be cared for in the present out-of-date amphitheater.

There were many special features of the 1908 fair relating to which the lack of space prevents comment. One matter, however, should not be overlooked, namely, the universal satisfaction expressed by stockmen in the ratings made in the various classes. Not in many years has a more competent and more honest set of judges been put to work, and while it is never possible to please all, yet awards as given in this issue show in a remarkable degree the relative merit of the animals entered. To some extent college men were rsponsible for this condition, though equal credit must be given to those experienced breeders who were called to the important task this year of placing ribbons. If there were classes "fixed" in advance this year they failed to come under our notice, and it mattered not whether the judge had come by his knowledge through the present-day stock judging schools or through long experience, the result was the same in practically every instance. And this condition means much, because we have seen the time when the "fixing" process was the rule and not the exception. We mean by this that judges were undoubtedly influenced in too many instances in the past by considerations which, though not known, nevertheless brought forth fruit; and on this point we take the time to compliment the fair management in the choice made of the judges. A list of judges including such men as Craig, of Texas; Mumford, of Illinois; Swallow, Kennedy, Roberts and Davis, of Iowa; Martin, of Wisconsin; Kizer, of Kansas, and Captain Robson, of Canada—these and others being kept busy during the week—means that square-toed, out-and-out decisions are to be expected. This is exactly what occurred and exhibitors on the whole expressed keen appreciation of the work done by these judges.

The contest held among girls and boys in the competition for the scholarship offered by the Iowa Agricultural College was more than usually interesting this year. It was held on Saturday and was therefore out of the way before the regular judging began. In the girls' class Miss Ruby Lynch, of Ames, won the $100 scholarship, second going to Sheila Hasbrouck, of Humeston, third to Pansy Edwards, of Des Moines, and fourth to Louise Wood, of Iowa Falls. In the boys' contest a number of classes of live stock were passed on and, in addition to this, both white and yellow corn were judged. The winner in the joint rating of live stock and corn was R. A. Rutledge, of Fort Dodge, whose score was 496. This won for Mr. Rutledge a $200 scholarship at the Iowa Agricultural

College. The $100 scholarship was won by N. O. Cooper, of Knierim, with a score of 483, while the $25 scholarship in the short course was won by I. C. Kinzer, of Bangor, who scored 475, the Scotch Collie pup as a fourth premium going to Frank Sanders, of Hartley, who made a score of 472. In this competition there were thirty-three entries and every man who took part in it made a most creditable showing. Professor McLean, who had charge of the contest, claimed it was the most successful that had ever been held, claiming as he did that never before had he seen so much promising material in one bunch of men.

CATTLE.

SHORT-HORNS.

Of the aged Short-horn bulls shows three were prize winners at Des Moines in 1907, namely, Whitehall Marshall, Whitehall King and Scottish Champion. In neither year have the judges—Mr. C. B. Dustin, of Summer Hill, Ill., in 1907, and Capt. T. E. Robson, of London, Ontario, in 1907—had any inclination to lead any bull ahead of old Whitehall Marshall. Although he has been successfully fitted and shown for five successive seasons, yet he is starting out on this season's circuit in remarkably good form—very naturally not quite the equal of what he was when in his prime, but, nevetheless, extremely good. Time and the annual grind of showing, however, are telling upon him and many admirers of the "grand old bull" are forced to regret that he is again making the rounds. He has everything to lose and nothing to gain in the venture. His laurels are won. His half brother, Whitehall King, stood next in line, which position is one better than he had last year when Bellows' bull, Good Choice, was placed above him. This bull has made remarkable progress since last year and unless something unexpected happens he is going to "make good" on the circuit this year. Scottish Champion, a Victor Baron bull exhibited by H. D. Parsons, was fifth in last year's ring, but fate was unkind and forced him down to sixth place last week. Anoka Sultan, formerly owned by Mr. Harding, once more stood at the head of his class and we predict that, in his case, history will again repeat itself. He is a splendid son of the illustrious Whitehall Sultan. C. W. Daws' Nonpareil Prince proved a disappointment to Captain Robson, for he was unable to place him within the money,although Mr. Dustin found him good enough for third premium last year. In the junior yearling bull class Thomas Stanton's old bull, Cumberland's Last, was again heard from. At least, a son of his, King Cumberland by name, stood in first place. He is the property of H. H. Powell & Son, of Linn Grove, Iowa. This class of fourteen contained many bulls of exceptional merit. The judge found a bull for second place in Thomas Andrews' Royal Diadem, out of the cow Juno by Diamond Rex. Count Abbott, a much younger animal, shown by C. L. McClellan, stood third, and had it not been for his lack of fitting would have given the other two bulls a still harder battle for their places. Unfortunately the youngster had been kept with the herd up to within a short time of the fair and consequently was not in the rig he should have been. F. M. Zenor, of Woolstock, Iowa, had a bull in the class which, while not the recipient of fancy money, was nevertheless a right good sort of a sire type, and with good care will develop into one that will make trouble in future show rings. This bull, Bach Grove Viscount, was sired by Viscount Secret out of Imp. Queen Bess. Whitehall Sultan and Whitehall Marshall sired three of the prize winners in the senior bull calf class, namely, Leader of Fashion, recipient of first money; Baron Sultan, of second, and Sultan's Crown of sixth. Fourteen tried for the positions in line and many possessed unusual merit, but the Harding bulls possessed still more. In deciding to give D. R. Hanna's aged cow, Flora 90th, the first premium, Captain Robson had to draw out a lot of six, but upon closer examination was able to confirm his first judgment without an exception. Two of these cows were from Wisconsin, one from Kentucky, one from Ohio, one from Iowa and one from Kansas. When it came to picking the winning junior heifer calves there was still closer picking, and several exceptionally good ones had to be lead back to the barns without any ribbons. George Sims had Cherry Blossom Anoka in the line, but it was her off day and she behaved miserably. Had this heifer been less restless and uneasy she would have shown to much better advantage. As it was she did not get within the money. Susan Cumberland, another gotten by Cumberland's Last, stood at the head of the class and she had proper credentials for the place, for she is as neat a block as is often seen. She did not have the front that her herdmate, Scottish Sempstress 4th had, but this winner of the red would be hard to beat in that respect, for she has a phenomenally good head and neck. Every detail of her make-up shows excellent Short-horn type and character. G. H. White's Hampton Lady called forth much favorable comment by reason of her excellent body. The judge possibly faulted her a bit on her plainness about the head. Taken as a whole, the Short-horn show was strong in number (possibly not equal in many former shows in this respect) and in quality as well. There were but a few tail-enders and there was not a mean class shown. To the surprise of many the animals were well fitted, for it had been thought that, owing to the prevailing high prices of feed, many herdsmen would appear with their cattle in poorer rig than usual. This was not the case. The animals were well fitted, considering that Des Moines is the first fair of the circuit. Better satisfaction has never been given in the Short-horns at Des Moines than was given by Judge Robson this year. He worked systematically and his decisions were consistent throughout.

HEREFORDS.

In numbers and to a lesser extent in quality the Hereford show this year was a distinct advance over any previously held. The ribbons were placed by Professor Mumford, of the Illinois Experiment Station, with the assistance of F. B. Mitchell, formerly of Tebo Lawn, on some of the more difficult classes. Some of these were stiff enough to require the utmost skill of both judges. While a few of the decisions were not exactly pleasing to the ringside, as a whole the placings were as satisfactory as could be expected under the circumstances. Cargill & Price and Van Natta & Son contested warmly for the honors as usual, breaking about even when the final reckoning was taken. Van Natta's aged bull, Prime Lad 9th, was the type to find favor in the eyes of the judge. He is extremely low set, thick-fleshed and massive, though lacking the size and scale of Cargill & Price's Bonnie Brae 3d. These two bulls made the circuit together in the two-year-old class last year, at which time Prime Lad carried off the lion's share of the honors. He is showing up very smooth this year, while Bonnie Brae 3d shows a tendency to patchiness. In the two-year-old class Cornish & Patton's Beau Carlos showed the smoothness and massiveness that the judge was seeking, and landed the blue ribbon without difficulty. The second bull, Mousel Bros.' Alto Hesiod, had plenty of width and depth, but lacked the filling in hind quarters that was one of the other bull's strongest points. As a class the senior yearling bulls would have made a better appearance for a closer acquaintance with the corn crib. None of them were in prime show condition, though first-class individuality was everywhere in evidence.. Van Natta & Son's Prime Lad 38th was an outstanding winner. He came nearer to being in condition than anything else in the class. Between the next three bulls the decision was extremely close. There was a rub between Logan's Castor and Cargill & Price's Princeps 15th in the junior yearling class. The latter bull's style and evenness of width from end to end made him look good for first place to many of the onlookers, but Logan's bull had more of the low-set, blocky type and was a bit superior in quality. In the senior bull calf class Heath Stock Farm's Repeater was a popular favorite for second place. In depth and width he had a manifest advantage over Cargill & Price's Bonnie Brae 13th, which wore the red. An inclination to poddiness and a bit of lack in quality were fatal to Repeater, however. Van Natta's Prime Lad 42d had the blockiness and condition to make him an easy winner of the blue. The high rating which the judge placed on smoothness and evenness was again shown in the junior bull calf class, when Cargill & Price's Princeps 20th was rated ahead of Mousel Bros.' Harold, a bull with a straighter top line, but with too much lack of width in hind quarters.

The class of twelve aged cows were so close that the assistant judge had to be called on. In the final rating Cargill & Price's Magnonette stood ahead of Van Natta's magnificent Pretty Face. This decision did not meet with popular approval, though Magnonette was more of the blocky, low-set type that the judge had been selecting. In scale and width of loin, however, she was far outclassed by the Van Natta cow. In the two-year-olds Cargill & Price had an easy winner in Miss Filler 2d, a heifer remarkable for her depth and filling of fore flank. In the senior yearling heifer class the second animal, Van Natta & Son's Cleo was more of the low-set, smooth type that the judge had been picking, and strict adherence to type would have put her either first or third. The first-prize heifer, Cargill & Price's Princess 2d, was a deeper and somewhat higher-set animal, as was also the third heifer, Cargill & Price's Princess 3d. Although the first three animals in the junior yearling class were very close, there could be but little question but that Cargill & Price's

Princess 7th was well deserving of first place. Of the twenty-two senior heifers, Van Natta's Miss Duchess 3d had the smoothness and evenness to capture the blue. Leona Lass, owned by the same firm, was a close competitor, though hardly as good in width of hind quarter.

The sensation of the Hereford show was the exhibitors' herds. There were nine of these, with five animals to the herd, making forty-five animals in the ring. It was a line-up of typy whitefaces to arouse admiration in the heart of every onlooker. Mitchell and Mumford went at the difficult task of placing the ribbons, and after over an hour of comparison placed the blue ribbon on the Van Natta herd. The decision between this herd and that of Cargill & Price was so close as to be almost a toss up. There were some splendid individuals in the latter herd, but it did not show quite the uniformity throughout that distinguished the Van Natta lineup.

ABERDEEN ANGUS.

With the opening of the fall show circuit the old-time rivalry between the herds of A. C. Binnie, of Alta, Iowa, and O. V. Battles, of Maquoketa, Iowa, was renewed. This year the presence of a third serious competitor, Rosengift Stock Farm, added considerable zest to the placing of the awards. So far Battles seems to have a little the best of it, with five firsts, exhibitor's herd and both championships to his credit. One show does not make a circuit, however, and if last year's awards are any criterion many of the placings will be reversed before the season is over. Rosengift Stock Farm is in the ring for business, as was shown by the two firsts and several seconds which they carried away. They will be heard from later. Battles' Glenfoil Thickset 2d, the bull that made a clean sweep in the two-year-old class last year, lived up to his reputation by taking first in the aged bull class and later the championship. He is a wonderful bull, and one that will be exceedingly hard to beat. He had a close second in Vala's Rosegay, the head of the Rosengift Stock Farm herd, however. Jim Delaney, last year's winner, was forced to be content with third honors. Battles' Golden Gleam, the bull that captured the blue in his class at the International last fall, led the two-year old class by a safe margin. He has superb quality and is remarkably uniform. In the senior yearling class Battles again claimed a first with Oakville Quiet Lad, a young bull remarkable for his depth and symmetry. Rosengift's Brookside Erin and Hess' Autocrat, the bulls that stood in second and third places, were of much the same type as Quiet Lad, and could hardly be called inferior. The placing of these three bulls was close, and they could be easily shifted. Binnie had an easy first in the junior yearling class with Cotto Mere, a bull of outstanding scale and smoothness. In the senior bull calf class Rosengift Stock Farm brought out an easy winner in Prince of Quality, a bull that combines growthiness with a remarkable degree of symmetry and quality. Aside from first place, the awards in this class were extremely close. Battles' Thickset Blackbird and Hess's Ebony's Quality fought hard for first place in the junior calf class, and were away ahead of the other entries in the class.

Battles' Glenfoil Queen 2d is a cow of wonderful depth, width, shapeliness and quality, and was an outstanding winner among the aged cows, as well as the prime favorite for championship. In the two-year-old cow class the fight was between Binnie's Queen Lass of Alta 3d and Rosengift Stock Farm's Queen Mother Johnson 2d for first place. The Rosengift heifer was a little better filled behind than Queen Lass, but lacked the former's superb blending of neck and shoulder and filling of flanks. The closest placing in the whole breed came in the junior yearling class, and the judge was free to acknowledge that there would be strong grounds for a different placing. The senior heifer calves were also a close class, it being a toss-up between the top four.

Taken as a whole the Angus show was an advance, both in numbers and quality, over that of last year. The judging was done by E. T. Davis, of Iowa City, with occasional help from Prof. Kinzer, of the Kansas Experiment Station.

GALLOWAYS.

Three breeders from three different states made the Galloway show—C. S. Hechtner, of Princeton, Ill.; J. E. Bales & Son, of Stockport, Iowa, and Straub Bros., of Avoca, Neb. Of necessity the classes were small, but, be it said to the crdit of the breeders, the animals shown were entirely representative and were almost without exception in good "fit." A. C. Binnie, of Alta, Iowa, placed the awards in a very satisfactory manner.

The exhibit of Galloways was necessarily select; it lacked in number, but made up in quality. Mr. Binnie confronted some difficult tasks in certain classes, but with one exception, did not call for assistance. In picking the champion cow Prof. Thomas Shaw was called in and agreed on Mr. Hechtner's aged cow, Evaline 2d of Avondale. Her victory was by no means a walk away. Scottish Pride, a junior bull calf shown by Straub Bros., was the star actor in the Galloway circles. This youngster was a smooth one from tip to tip. In fact, he was so good throughout that many at the ringside even claimed he was the best young thing shown at the fair.

RED POLLS.

Dual purpose enthusiasts, in general, and admirers of the Red Polled breed in particular, had a rare treat at Des Moines last week. In the first place there was a phenomenally good showing of these cattle, every class containing several excellent representatives of the breed and many classes being so crowded with outstanding individuals as to require the closest scrutiny to properly select the winners. From beginning to end the exhibits were highly gratifying and creditable in every respect. In addition, Mr. James W. Martin, of Gotham, Wis., placed the awards and it is safe to say that no one in America could give better satisfaction to breeders. Mr. Martin has made a careful study of this breed; he knows its merits and special qualifications and, still more, is gravely interested in its very best development. In the past the breed may have suffered at the hands of some judges who have not had a perfectly fixed standard for Red Polled cattle. This Mr. Martin has. He has bred Red Polls and therefore knows the capabilities and potentialities and fully realizes that a certain fixed or definite standard must be accepted if the fullest success is to be attained. That Red Polled cattle breeders do have an established type even the most skeptical could hardly question after inspecting the herds exhibited at the Iowa State Fair. To be sure, the herds exhibited were some of the very best in the country, but they are, nevertheless, entirely representative. Following is a list of the breeders who had herds at Des Moines last week: Frank J. Clouse, Clare, Iowa; Dan Clark, Cedar Falls, Iowa; Adolph P. Arp, Eldridge, Iowa; W. S. Hill, Alexandria, S. D.; Frank Davis & Son, of Holbrook, Neb., and Charles Graff, Bancroft, Neb Visitors expected to see good "stuff" exhibited by these men, but even their best expectations were exceeded.

The yearling bull class was an interesting one to many at the ringside. Not a few picked Dan Clark's sappy Midnight for the winner, but Judge Martin did not find him as good a handler nor as typical a Red Polled sire as Mr. W. S. Hill's Rutland, a growthy dark youngster by the bull, Protection 12095. In the aged cow class Mr. Hill's cow, Inez, had no difficulty in carrying away the first honors. It will be remembered that this same cow was the grand champion Red Polled female at the 1907 Iowa State Fair. To all appearances she is the same splendid individual that she was a year ago and her fit and finish was about all that could be desired. Cremo, sired by Happy Jack, a bull from the herd of G. W. Coleman, of Webster City, Iowa, as were Logan and Durock, second and third prize winners, proved an attraction to every man who cared for the breed at all. This bull, now owned by Frank Davis & Sons, of Nebraska, by reason of the rare manner in which he embodied the standards of the breeds, was picked as the first-prize aged bull and then as the champion of the entire show. Several of the other classes and animals deserve equally complimentary comment, but we must content ourselves by voting the 1908 Iowa State Fair Red Polled show, as did many another, the best (with possibly but one exception) ever made at Des Moines.

POLLED DURHAMS.

The Iowa State Fair show of Polled Durhams is never lacking in interest, for invariably a goodly number of the best herds in the country gather at Des Moines each August. Iowa generally has several good herds entered, Wisconsin has one and Indiana, that stronghold of Polled Durhams, seldom fails in sending a representative group of the "hornless" Short-horns. This year herds were entered by Shaver & Deuker, Kalona, Iowa; L. S. Huntley & Son, Chariton, Iowa; William Smiley, Albany, Wis.; and Oscar Hadley, Plainsfield, Ind. Prof. R. J. Kinzer, Manhattan, Kan., was called upon to tie the ribbons. Although entirely familiar with the breed and much experienced in judging, Mr. Kinzer frequently found great difficulty in placing awards. In one instance, that of the exhibitor's herds, he was forced to call in Mr. E. T. Davis, of Iowa City, for counsel, as the exhibits were so close.

JERSEYS.

Prof. H. G. Van Pelt, of the Iowa State Agricultural College at Ames, judged the Jerseys and while he was not called upon to examine large classes, yet he did have ring after ring of superior animals—superior in breeding, individuality and finish. In fact the little corner of the show ring given over to Jersey cattle proved intensely interesting to many. The Jersey show was good, even excellent as far as it went, but it did not go far enough. This condition of affairs, however, is scarcely amendable, for everyone knows how extremely reluctant dairymen are in exhibiting their herds. A dairy animal generally has an extremely nervous temperament which naturally does not take kindly to changed conditions and surroundings. These changes are necessarily incident to the fair circuit and consequently men are reluctant to show. The few who did show at Des Moines exhibited some very choice representatives of their herds and deserve every possible credit. Messrs. Dixon & Deaner, of Brandon, Wis., were the largest exhibitors. In the aged cow class this firm had but little difficulty in capturing first and second places with Morey's Golden Lass and Silver Carrie. The former was an extremely beautiful and nicely-turned golden fawn sired by Fancy Golden Lad and out of Morey's Franklin. The cow in second place was a year younger and was scarcely up to her herd mate in dairy type. A daughter of Morey's Golden Lass appeared in the heifer calf class and took first place without a question. This young thing, Bessie's Golden Lady by name, was or eventually will be, a good reproduction of her mother. Against her was shown a late calf owned by Honeywell & Reedy, of Lincoln, Neb., which was full of promise, but as she appeared last week was not entitled to better than third place with Dixon & Deaner's two calves in the ring.

HOLSTEINS.

Iowa's display of Holstein-Freisian cattle is never complete without the herd of Mr. W. B. Barney, of Hampton, Iowa, and consequently the Iowa State Fair Holstein show was not an unqualified success. Four breeders, two from Iowa, Mr. August Winter, of Boyden, and Mr. C. P. Houtsma, of Orange City; one from Minnesota, Mr. John B. Irwin, of Minneapolis, and one from Kansas, C. F. Stone, of Peabody, entered animals and competed for the premiums. More spirited competition was needed in nearly every class. The judging in these, as in the Jersey classes, was done by Professor Van Pelt, of Iowa State College. In the aged Holstein cow class he found an easy winner in Mr. C. F. Stone's Maryke 3d Gerben 4th. This cow is now nine years old and has been a wonderful milk machine. She carries abundant evidence of her milking qualifications in her large, tortuous milk veins, her many milk wells, a well-placed and well-developed udder, large, capacious barrel and general milk temperament. She is a pleasing matron in the ring and must be a favorite in the herd.

FAT CATTLE.

There were enough entries in the fat classes this year to make a fairly good showing, and when it came to the grand championship the placings were very close. The awards were made by Captain Robson, Mr. Mitchell and Professor Mumford. Saunders' champion Short-horn steer, Look Me Over, was in very good condition and had an abundance of spring of rib, quality and depth. The judges hesitated a long time before putting the grand champion ribbon on the Angus steer, Edison. He is a low down, blocky and evenly fleshed, but to many the Short-horn steer would have looked better as champion. The grand champion herds were also very close. The ribbon finally went to the Saunders herd, chiefly on uniformity.

HORSES.

PERCHERONS.

The Percherons were the sensation of the horse show, if not of the whole fair. There was not a dull moment from the time the twenty-two aged stallions lined up for the inspection of the judges until the ribbons were placed on the champions. The ringside was packed with excited onlookers, who occasionally broke into cheers as some particularly close placing was announced. The judging was creditably done by Alex. Galbraith and Prof. W. J. Kennedy. The twenty-two aged stallions, all in the pink of condition, were a difficult proposition for the judges. After the short leet of ten head had been chosen it looked to the average bystander as though the only way to place the ribbons would be by lot. The size, symmetry and muscling of Singmaster Bros.' Aurele finally gave him the blue, however. Burgess & Son's Decime, the horse that landed second in the final shakeup, is a horse of outstanding quality and finish, but scarcely showed the scale of the blue ribbon horse. With many the

First Prise Two Year Old Percheron Stallion,
Iowa State Fair and Exposition, 1908.

third horse, Bonpays, a gray belonging to Adam Stamm & Son, was a favorite for first place. He had the Percheron type in an outstanding degree—size and muscling throughout. He didn't move, however, to suit the judges and this outweighed his other good points and he was relegated to third place. No sooner had the aged stallions vacated the ring than their places were taken by a class of fourteen toppy three-year-olds. The first four animals in this class were of the ideal Percheron type. The fifth horse was a somewhat more leggy animal of high-class action, but the heavier type seemed to find more favor in the eyes of the judges. Taylor & Jones' Ryan, the capturer of the blue, is an exceedingly massive, heavily-muscled horse. The second horse, Burgess & Son's Notcher, was a somewhat lively actor, but hardly as well muscled in the hind quarters. He was a clean-cut drafty fellow, nevertheless. The real sensation came with the two-year-olds. There were thirty of these, a line reaching two-thirds of the way around the ring. It is doubtful if a class equal to this in numbers and quality was ever shown at a state fair in this country. It was certainly a record-breaker for the Iowa fair, and strikingly showed the great advancement that is being made in the horse department as a feature of the show. After an extended examination a short leet of nine was selected, which was later reduced to seven. Then the real work began. The horses which captured the two top places, Burgess & Son's Gascon and Singmaster Bros.' Guerrier, were of much the same type. There could be little question about their relative placing, however, since Gascon's great symmetry and extraordinary muscling are of the kind that is hard to beat. He was later awarded the championship ribbon. The third horse, Burgess & Son's Gabrais, was a trifle light in the middle and in the bone to make a serious competitor for the crackers above him. The yearlings were not a close class. Burgess & Son's Blondin, a massive, muscular iron gray, was an easy winner. Not to be outdone in size or excellence of showing, the aged mares lined up twenty-two strong for the inspection of the judges. The work of selecting the short leet was slow, and the five mares that composed it were all outstanding representatives of the breed. Burgess & Son's massive Castille, a first-prize winner at last year's International, easily captured the blue, and later the championship. McMillan's smoothly-turned Iolanthe, the second premium mare at the International, was placed below Singmaster's Soubrette, a heavily-muscled mare of much the same type as Castille. In the three-year-old class, McMillan's Columbine, an outstanding mare of much the type of Iolanthe, was well deserving of first place. Patterson & Errickson's two-year-old Sybil was of the low-down, blocky, heavily-muscled type that found most favor in the eyes of the judges. The second mare, Burgess & Son's Razelle, is a plainer animal and hardly as good in spring of rib, though otherwise she is scarcely to be faulted.

SHIRES.

For uniform excellence throughout the Shires excelled everything else in the horse classes. Every entry was up to standard and quality was everywhere in evidence. There was not an easy class in the entire breed from the judge's standpoint, and the satisfactory way in which the animals were placed speaks well for the ability of Mr. W. E. Pritchard, of Ottawa, Ill., who did the judging. Eleven toppy animals were lined up in the aged stallion class. They were all outstanding representatives of the Shire type and were a sight to gladden the eye of a lover of good draft horses. Taylor & Jones' Waresley Defiance, a horse that won third in his class at the last International, won over Truman's Busy Radium by a narrow margin. The second premium horse was almost a sensation in the matter of type, but he was up against a hard proposition because Waresley's Defiance is one of the hard nuts to crack. The three-year-old Shires were more uniform if possible than the aged class. Burgess & Son's Ashwell Besswood and Truman's Shelford Friar fought hard for first place. Blockiness of a most attractive type possibly won the judge in favor of the Burgess' horse. Truman's Busy Magnet is an exceptional actor, and with a little more weight to his credit would have crowded hard for a higher place. Finch Bros.' Joliet Wolf, which took first in the two-year-old class at the International last fall, fell to fifth place, the competition being too strong for him. In the two-year-old class Truman's Bradgate Blue Jacket, though a bit thin, showed promise of developing into a splendid animal. In bone, action, and hind quarters, he easily outclassed anything else in the ring. The second horse, Crownover's Friar, was an animal of much the same type. Soderberg's Osco Baron Prince won an easy first in the yearling class.

When it came to the exhibit of females the Shires did not slacken the pace that was set by the stallions. The three animals that stood at the head of the aged mare class were outstanding representatives of improved Shire type that it would be hard to equal in any show ring. The first two mares, Wrydeland's Starlight and Enfield Fuchsia were owned by Truman's Pioneer Stud Farm. They were dapple gray in color, and of wonderful size, massiveness and muscling. There could be but little choice between them, though Wrydeland's Starlight was a bit wider and better muscled in hind quarters. The third mare, Berkey's Queen of Hearts, was of the same type as the other two, and while nearly as large could hardly equal them in condition and symmetry. The five three-year-old mares were of a uniform high class Shire type throughout. Crownover's Northea Melody took the blue and a right good one she is. The judging was done by W. E. Pritchard, of Ottawa, Ill.

BELGIANS.

Second only to the Percherons in numbers, and with quality and style that testifies to the skill of the improvers of the breed, the Belgians contributed in no small degree to the success of the horse show. The prizes were well divided among the principal exhibitors, and every ribbon was well earned. By the time the eighteen aged stallions had been sifted down to six it became evident that Robt. Ogilvie, who made the awards, had a difficult piece of work laid out for him. There could be no question but that Taylor & Jones' Parpart Pruyere had enough of the typical wide, deep Belgian form combined with his exceptional quality to entitle him to the blue. It was no walkaway, though, for Grigsby's Martin Du Hayoir was a larger horse, and but for a little shortness in croup and plainness about the head and neck would have made things lively for the Taylor & Jones' horse. The third animal was short and chubby, a little on the old-style Belgian type. In the three-year-old class Irvine's Coquet had the massiveness that the judge was looking for, and with it had the style and quality that the second horse, Loughridge's Gaillard, lacked. Finch's Paul de Roe had the superb massiveness and smoothness to make him an easy winner in the two-year-old class. Lefebure's Brilliant was an animal of much the same type, but he lacked Paul de Roe's muscling and was a trifle further from the ground. While the Belgian mare classes were not well filled, the competition was keen and some splendid individuals were shown. J. A. Loughridge's Madame II, winner of first in the aged class and later the championship, is a mare of great scale and massiveness. She has never yet met defeat in the show ring. Lefebure's Idealiste was an easy winner over Hawley & Ives' Milliaire in the yearling class. She is a very smoothly-built mare of first-class quality and gave the Loughridge's mare a close rub for championship.

CLYDESDALES.

Though greatly overshadowed in numbers by the Percherons, which occupied the ring at the same time, the Clydes made a showing that was a credit to the breed. The aged stallions were an especially strong class. Gaibraith & Son's Baron's Voucher, a splendid actor, pushed W. V. Hixson's Baron Clifton hard for first place, but the latter's superior depth of barrel justly gave him the blue. John Leitch's Quartermaster was good enough in conformation to win third, though he was hardly up to the notch in action, a point on which W. E. Pritchard, of Ottawa, Ill., who placed the ribbons, lays considerable stress. Fourth honors went to Galbraith & Son on Alloa Lad. Among the three-year-old stallions Galbraith & Son's Batewill carried off the blue, his quality, muscling and action making his an outstanding winner. Between the next two the decision was close, but the red was finally given to Merry King, owned by John Leitch, of Lafayette, Ill., while Galbraith & Son's Sir Rupert was given third. In the two-year-old stallion class Galbraith & Son again came in for the lion's share of the honors, carrying off first and second with Baron Cowdor and Heather Blossom respectively. In the yearling class the preference of the judge for action was again strikingly shown. Galbraith's Baron Montrave, which took the blue, was such an outstanding actor that the judge could not see his way clear to place it anywhere but at the head of the class, though Galbraith's Auditor had condition and substance enough to make warm competition.

Soderberg's Osco Sweetness led the aged mare class by a safe margin. She is a smooth, blocky, well-rounded mare, one that would acquit herself creditably in any ring. His Thorn Cliffe Belle, which took the red, was hardly as symmetrical as Osco Sweetness. The third mare, James Pedley's Queen of the Clydes, was a splendid animal, but in rather thin condition. Palmerston's Darling is a heavily-muscled mare of superb quality, and was good enough to capture first in the three-year-old class, second in the aged home-bred mare class and later the championship. Hixson's Peach Blossom, which won first in the yearling class at the International last fall, is showing up well this season. She had a walkaway in the two-year-old class. John Leitch's Edna, which carried off the red, is a strong-boned, growthy mare, but too light in the middle to make a serious competitor to Peach Blossom. Hixson's Lady Palmerston is a sweet, typey filly, and was an easy winner in the yearling class. Soderberg's home-bred three-year-old mare, Osco Bloss, had the symmetry and quality to put her first in this class. In this class for mares under three years bred by exhibitor, Hixson's Peach Blossom was beyond competition.

SWINE.

DUROC JERSEY.

Statistics of the numerical strength of this popular breed placed it again at the head of the list, there being an even 900 head in the pens. The position can be claimed over the Poland Chinas by the small margin of a half a hundred, the shrinkage on the number shown last year being about 300. This decrease was accountable principally to the absence of many who regularly come to the fair only to sell. As suspected sales were nothing to boast of, which would seem to indicate that boar buying will be more extensive at the fall sales, and the connection between the buyer and seller merely delayed a spell. This condition applied to the transactions in all the pens. As to the general excellence of the classes, nothing but praise can be offered, though as might be expected there was less extravagant fitting than usual. The success of those who for the first time submitted subjects of their fitting to the consideration of the judge was notable, though for the most part the competition was between those of experience. The number of breeders from outside the state was limited to a bare dozen. The deficit of numbers, however, was counterbalanced by a degree of excellence which won some of the best ribbons. Illinois sent six herds, Nebraska three and South Dakota and Kentucky one each. The awards were made by the veteran breeder and showman, Mr. N. H. Gentry, of Sedalia, Mo., who did the work of distributing ribbons carefully and conscientiously. The disgruntled exhibitor is always in evidence, and if he was any more so than ever on this occasion, the conditions under which the classes were shown were chiefly accountable. Two things seriously hampered the work of judging. The one the absolute lack of order in the arrangement of display hurdles, made comparison slow and bunglesome and the other, the ever-present onlooker in far too great majority made headway from one part to another tedious and discouraging. A short leet, the only resort in large classes—and some were to the extent of sixty head—was out of the question. These faults can easily be remedied by the co-operation of all parties interested, and they should be for next year's show. Around the making of awards of a show centers the success or failure of that great event, hence the need of facilitating the task of the judge. What we have said here applies in all breeds, but particularly in those classes which congest the show space on account of their numbers. The contest for champion boar was between Illinois and Iowa, as last year. It went after a spirited contest to the grand specimen of Duroc excellence, Model Chief 2d, shown by Johnson Bros. & Newkirk and C. W. and Wm. Reed. Fagan, Browning & McCabe's Express Package, and Griffitt's The King, were a pair of competitors that won much favor with the ringside. The champion sow earned her title in a close contest, she being known as Barbara's Queen. Her strong competitor shown by Mr. Ashby got champion bred by exhibitor.

The problem which faced the judge, Mr. Gentry, in the opening class of the Duroc show was to select from an even quarter of a hundred kings of the breed the best seven. In choosing Model Chief II for the first place, a boar of substantial makeup and type closely approaching ideal was honored. The decision for second place was made on good grounds and was filled by a worthy competitor having the same sire, Model Chief, and the prestige of this famous sire of prize winners was further added to in the selection of a fourth-prize winner, namely, the Hockett entry. Easton Bros. got a third out of the contest with a well-fitted, good type of boar. Mr. Miller's Daisy's Advance got his place on good grounds; Wonder Boy, a litter brother to the champion last year, got next place, and the enterprising firm of Balmat & Son.

POLAND CHINAS.

The show of this breed scored its usual success. There was something like 850 head on the grounds, a deficit over last year's number of a round hundred head, due largely to the absence of the usual sale stuff. There was to be observed the unfortunately wide divergence in type with the plump little parlor pets on one hand and the "whoppers" on the other, and in between were the more conservative type that maintain the good name of the breed. The showing afforded a full share of interest and entertainment to the visitors, and some disappointment, as always, to admirers. In the hands of Mr. L. H. Roberts, of Paton, Iowa, the tying of the colors progressed with generally satisfactory results. The type of hog chosen for honors by Mr. Roberts was the tidy, smooth kind, of medium size, sound and active. The sluggish hog of either sex is not the kind to improve the breed, which was thus emphasized in the awards as consistently as possible. A noticeable feature of the show was the frequency in which the progeny of past prize winners won. The competition was for much of the time four cornered—Indiana, Illinois, Missouri and Iowa being the principals. The champions in both cases were hotly contested for and in the open contest went to eastern herds, while the champions bred by exhibitor were gotten by Iowa breeders, which award closed the two days' contest.

CHESTER WHITES.

The display and contest for honors in this breed constituted one of the most interesting and instructive features of the swine show. Approximately 450 were in the pens, about the same as last year, and the quality of the display was on a par if not superior to that of past exhibitions, all of which speaks well for the foothold which the breed is gaining in the corn belt. The only herds (two in number) from outside the state came from Illinois, while the home representation comprised a quarter of a hundred herds. Awards were made by the pioneer swine breeder, Mr. W. Z. Swallow, of Waukee, Iowa, who gave careful attention to the task.

BERKSHIRES.

The show of Berkshires was a live one. It was highly complimentary to the breed. Mr. N. H. Gentry, of Sedalia, Mo., made the ratings in a manner that left no doubt as to their consistency. Outside of a single exhibitor from Nebraska, it was a home show, and a good demonstration of the high excellence which is being attained in corn-belt herds. There should be, and there is a place for herds of this, the oldest breed in existence, in every corn belt community. The championship on boar was won by an Iowa breeder, Mr. Ogle, on a very promising senior yearling, Premier Belle's Duke, while the champion sow was the aged one, Tilda's Model, in the Nebraska herd owned by Mr. Holt.

HAMPSHIRES.

The popularly called thin-rined or white-belted breed, but officially known as Hampshire, made their initial show at the fair this year. Seven well-fitted herds numbering 150 head constituted the display and aroused much interest and attention. Had pens been available, fully double the number would have been on the ground. As it is, a start has been made which promises much for future exhibitions. And it is pretty certain that the efforts of breeders in this direction will be attended with the best results. The rapid advancement of this breed in favor among farmers and packers is being made on good grounds. Professor Ferguson, of Chicago, made the awards and stuck close to the long, smooth-sided hog, of size and quality. A tendency "to the lard" was too much in evidence in some cases, and this is liable of course to occur when pigs are reared with too free access to corn.

TAMWORTHS.

Awards in this breed were made by Mr. J. J. Ferguson in his usual careful and precise manner.

YORKSHIRES.

The showing in this breed was considerably reduced this year owing to the absence of several of the herds which regularly show, but one herd being in the pens. This was owned by Mr. B. F. Davidson, of Menlo, Iowa, who brought thirty-two head. Mr. J. J. Ferguson, the judge, granted full honors to the exhibit, which was a highly creditable one.

SHEEP.

A very excellent showing of sheep was made at the Iowa State Fair last week, and this department attracted more than its usual share of attention. The auction sale held on Thursday by George McKerrow & Sons, of Wisconsin, was a new thing for Iowa breeders, and the promptness with which the McKerrow sheep were picked up certainly indicated a revival of the interest in this class of live stock. The private sales made were numerous and practically every breeder present disposed of his surplus ewes and rams. This applied not only to the American-bred, but also to the imported animals.

IOWA STATE REGISTER AND FARMER, DES MOINES, IOWA.

Nothing seemed to be out of joint at the Iowa State Fair last week. The weather man after having made a few moves in the way of dark clouds and morning sprinkles, settled down to business and gave almost ideal weather for the rest of the week save that of Friday when he opened his flood gates and a real drenching rain poured down in all its unwelcome dampness which drove the thousands of visitors to shelter in the various buildings. It was a good natured crowd and if one jostled his neighbor it did not matter.

A suggestion has been made, called out by the rain, that it would be well for the Iowa fair management to provide some covered walks, after the plan of Illinois, but one who has been there during a time of rain complains that while such are very convenient for people to get in out of the rain, they likewise furnish a place for the people to stand under the shelter while those wishing to pass along the covered walks to some building where they may continue their sight-seeing are prevented from doing so unless they get out from under the shelter.

This year is the first year that the Iowa State College has had sufficient space to make an exhibit of the work that is being carried on at Ames. The old secretary's office had been set aside for their exhibit, where much information had been compiled for the edification of those interested in such things. Prof. Pammel gave an interesting lecture on diseases of grasses and had the various samples of grasses with the cultures of such diseases as they are heir to. Prof. Bowman was in his usual good humor and tried in every way possible to assist the seeker after knowledge to find it. Many hours could be profitably spent in this building.

The fair began one day earlier this year than formerly and it was a matter of surprise to note the great number of visitors who came to the fair on Saturday, the first day. That day had more the appearance of Monday or Tuesday and the show was complete. It was children's day and if any one thinks there is danger of race suicide, he had better consult some one who was at the fair on that day.

More than 200,000 people saw the great Iowa State Fair this year and the throngs kept up until the rain on Friday gave everything a chill that meant many thousands of dollars of loss to the fair. Already the fair had been pronounced by officials to be a financial success and when the rain began to come there was an assurance that the sinking fund would still be augmented, despite the rain.

The live stock exhibit was the best to be found anywhere. It was simply a repetition of former years with a few added to the number. There was not only a larger number of all kinds of live stock present, but there was an appreciable improvement in the quality which proves to be the great educator of the fair. It is here farmers can come and see the value of breeds and the result of feeds and where he can make practical comparisons of such animals as may be of interest to him and he can see the possibilities. Men have learned that what one man can do another can do under like conditions, and it is this that is spurring stock breeders to do their very best.

Only a brief while ago the horse barns at the fair were empty and no one could interest any breeder of horses. They were a drug on the market and the transition state was just taking place from a poor grade of common horses to something better. At the close of that period farmers understood the problem and asked for something better and this has induced an exhibit of some of the best horses in the world. Iowa farmers have also found that it is almost as essential to have good mares as to have good stallions and this has called out the greatest exhibit of mares America has ever seen. The old horse barns have been switched about remodeled, and new ones have been built until there seemed to be no vacant stall in all the buildings required to house the one thousand head of horses.

The Beatrice Creamery Company had one of the most attractive features on the ground. It was located in the dairy building and consisted of a sculpture figure made of butter. The figure showed a Jersey cow at a drinking trough where a small boy was pumping water for the cow to drink while a second boy was milking a stream of milk into a pig's mouth, and the countenance of the pig as well as the kink of his tail showed infinite satisafction while the boy seemed to be very much pleased. The sculptured figure was the work of Prof. Daniel of St. Paul and is really a work of art.

Occasionally we heard persons say that they tire of state fairs, stating that they all looked alike to them, and when such people were sounded it was found that they held complimentary tickets to the state fair and that they had about as much idea of the scope and magnitude of a state fair as they had of science of an undiscovered art. The farmers and their wives never tired looking at the many features of interest to them and all pronounced it a great educational feature worth going many miles to see. In our inquiry about the fair we ascertained that all up-to-date farmers of the state were very much impressed with the permanent structures that were being put up from time to time and feeling proud of such a fair, they felt that the legislature should not withhold a liberal hand in making provisions for such buildings as were very much needed. All joined us in the belief that a new grand stand was very much needed and such of our visitors who had seen other state fairs wondered why Iowa was not just a little more liberal toward this one of her best and most useful state institutions.

As we stood in the agricultural hall, recently built, and saw the fruit, grain and dairy displays in this building we could not help but observe a need for each of these interests having a separate building. Certainly the grains, grasses and vegetables of this great state are most important, and no one but a simpleton, who can not see further than a "punkin show" would object to any such advancement. The corn alone is worthy of such an expenditure. It would only be justice to the horticultural and dairy displays to provide separate and suitable buildings for them as soon as possible. We believe that such improvements will be made at the earliest possible moment.

The railroads made a wise move this year in the reduced rates they gave fair visitors and in the magnificent service they gave patrons in times of excursion when no one expects the best of service. Trains brought people to the capital city by the tens of thousands and all appreciated the reduced rate given them. There is no losing sight of the fact that the state fair being the occasion when a great many people take their vacation and it is then when they obtain the greatest enjoyment in such a vacation, and they certainly are in a position to appreciate a reduction in the regular fare.

The special features of the fair this year were of the highest order and were instructive as well as entertaining. The evening show in the stock pavilion was a most excellent one being a combination of horse and trick show. While the fine horses and other stock which were led into the ring were most attractive there were such other additional features as to make it attractive to such persones who could see no beauty or interest in a fine specimen of the equine race. We heard many compliments favorable to the night show.

If no other one thing could be seen but the two six-horse teams on exhibition by Armour and Pabst, it would repay for making a trip many miles to see. These teams are a marvel and would have been among the things impossible a decade ago. So large, so fine, matched so well and all the accompaniments in the way of harness and wagon so fittingly made them presentable in the best manner. We gazed at these teams as intently as we did the first locomotive we ever saw. Others did the same thing.

If we were called upon to write up the exhibit of implements at the state fair we should be compelled to ask for weeks in which to make the inspection and then would require a much greater time than that usually alloted a writer to give an account of them. We simply became exhausted in trying to see everything in the implement line. We followed the steam plows with as much eagerness as a small boy escorts a brass band through the streets of his town. We did not tire at the practical demonstrations of all kinds of field machinery which were being given practical tests in a field set apart for that purpose. We were most especially interested in grain drills and their operations, and as we looked at their work we only wished we could compel the use of a drill wherever small grain is grown. The grain cleaning machinery came in for its share of time and attention. Manure spreaders were there—not two or three of them—but by the acre. These were being inspected by farmers as never before. The more interest created as to the necessity for manure spreaders the better system of soil improvement will be inaugurated.

On Wednesday many thousands gathered at the "big tent" on the hillside to see and hear Secretary Wilson, who spent two days at the fair.

"Tama Jim," as he is familiarly known by Iowa people, spent much time making comparisons of the present fair with those of the past, when he was an annual visitor at such fairs. In his talk he told the people what was being done for agriculture in his department at Washington, and he certainly enjoyed the hearty handshakes of his many friends.

IOWA'S PEERLESS EXPOSITION.

"See Rome and die" is an old saying that carries with it the implication that there is nothing else to see, or that one has lived his life and finished all that he is capable of doing when he has seen Rome. See the Iowa State Fair and one will have seen the best products of earth, the finest live stock of Iowa's broad acres and sister states' production and all the greatest results of man's genius and skill. In almost every department the simple word with so much meaning, "big," fails to give even an idea of what one sees at this fair. Everybody in the state seemed to be at the fair dressed in their "best bib and tucker" exhibiting on every hand unparalleled prosperity. The weather, although not without its threatening clouds and a slight precipitation on one or two days of the fair, was not in the least deterrent, but more fully demonstrated Iowa's ability to rise superior to the elements. Iowa has served notice long ago that she is firm in the belief of "plenty of water" and in nowise could slight sprinkling or lowering clouds interfere with the success of the fair.

The Iowa State Fair somewhat resembles the boy of fourteen who may be said to be in the "gosling state"—that is just between boyhood and manhood. Old buildings have been removed to outer and less conspicuous locations and new ones have replaced them which are of more permanent character and still the business of rebuilding goes on, all of which are much needed. The realizations and hopes of all who are proud of this great commonwealth may be reached in the near future. Iowa made one of her best improvements when the live stock pavilion was built, which has so comfortably quartered both exhibitor and visitor, but how inadequate so soon. We very well remember that only a few short years ago Iowa's best cattle and horses had to be shown in the open, be that torrid sunshine or drenching rain. The more we see of this pavilion the more we are impressed that it will either have to be enlarged or another built so as to divide the show ring exhibits and the crowds.

For many years Iowa has been the first state in her showing of swine and at one time the state fair was thought to have had the best accommodations for hogs in all the great list of state fairs. All out of doors seemed to teem with swine of all ages, colors and merit calling for almost as many first premiums as there were individuals in the ring. Even such quarters were outgrown and Iowa undertook the herculean task of erecting a building for her unexcelled and seemingly unapproachable exhibit of swine. The arrangement of this building seems to be ideal in the way of ventilation, comfort and sanitary provisions. So gigantic is this structure that all pictures which may be taken of it can incorporate only a portion of its magnificent architectural beauty and efficiency. Room for over 3,000 swine and then many exhibitors had to stay away. The fact was more in evidence this year than ever that it is not incumbent on any fair management to furnish costly quarters for sale stock. Enough has been done when show stock is comfortably housed.

This year the management finished a new building almost in the center of the grounds for the officers of the fair, where all business can be transacted without inconvenience. Surrounding this building, known as the administration building, is a wide porch and that together with the copious rotunda on the inside afforded friendly shelter to many thousands of people on Friday, when the drenching rain drove people to shelter. The expenditure necessary for building this structure was wisely expended and is a much needed improvement.

In the agricultural building was to be found the best corn show on earth. Nothing like it has been seen anywhere. Several counties had well arranged exhibits of their products competing for a liberal prize. Cass county captured the first prize on a well arranged exhibit, and for artistic display of grains and grasses, Cass also took the prize on a most artistically arranged figure made wholly of grain. Other counties had creditable displays of grains and other products which attracted much attention.

The old wooden amphitheater which was built in 1896 to replace one which had just been taken away by cyclone for many years has been inadequate and unsafe. The management is now laying plans for a steel structure that will fill the bill. It is contemplated that the new structure will hold at least 20,000 people and that it will cost not far from $150,000. The present structure will hold only about 5,000, and any number beyond this makes it unsafe. This year it was filled to its capacity long before the time for the races and many were compelled to stay out. It has been estimated that the loss from this source alone would have built a new amphitheater.

It is to be regretted that the management did not see proper to make one admission cover all the inside features of the fair. Some criticism on this point has been made. Of course there is great need for the money since the matter of obtaining help from the legislature is wholly problematical. Liberati's great musical concert this year was given in front of the amphitheater and one had to pay another admission to hear that, and to attend the horse show another admission was required. These were not concession features, but a part of the fair. Of course the management claims that the money is very much needed to defray expenses and for a surplus for less prosperous years. While this is all true, it it also true that the fair is an educational institution and not a money making affair. It is to be regretted that this one state institution must be singled out of all others and placed on the requirement that it be self-sustaining. The state should be liberal enough to arrange for all necessary buildings, and then the management could be more liberal in the dispensing of convenience to visitors.

(NOTE.—It probably never occurred to the writer of this article that it an admission fee had not been charged to the night show in the stock pavilion no show would have been held. Again, the management was aware when arragements were completed for this entertainment, of the fact that it was not possible for the receipts to more than cover the cost of production. In other words, the management merely advanced the money to provide the extra entertainment for those who desired it and were reimbursed for the expenditure during the fair, or nearly so, for in this instance, like other similar cases, some of those for whom the management made the advancement failed to pay it back.—EDITOR.)

There is some talk of making the Iowa State Fair a two weeks' exhibition. This talk has been made before, but since Iowa is the first in the circuit of state fairs it is possible to increase the number of days to advantage. The two added days this year were noticeable in the distribution of the crowds. Saturday was a day of large attendance. By having a ten days' or two weeks' fair it may be possible to get away from the "big days" and thus distribute the attendance all along through the whole time of the fair.

This is the first year that our friends have come to see us on the fair grounds in their automobiles, but we were both surprised and pleased to notice how many of our good Iowa farmer readers took this easy method of seeing Iowa's greatest show. It was a common sight to see parties on the ground who have run in to the fair from a hundred miles away. Next year we expect to see many more farmers with good automobiles.

We were surprised to hear some people in our building one day talking about the manner in which the state fair was managed. They had the impression that it was a sort of private affair and that the earnings went to the individuals instead of the state. On making some inquiry we found there were a number of people who thought the same thing, so we took the occasion to explain the workings of the state fair management. It is not a private affair in any sense of the word and the board of directors who manage it have no more financial interest in it than any other good citizen of the state. It belongs solely to the state of Iowa and all monies left over after all expenses are paid are put into new buildings and other improvements on the grounds.

Never before in the history of the fair did the exhibitors do as much business as this year. Many of the farmers found it handy to leave their orders for the different machines they were interested in and could see them in operation. One manufacturer of cream separators said he had filled up one order book early in the week and started another. There was never such an exhibit of farm machinery gotten together before in this country and it was a great opportunity to study the wonderful advancement in this department of farm work.

And this calls to mind another thing that impressed us and that was the great number of young men managing farms who visited us on the grounds. They may talk about the young men leaving the farm, but that was not the impression we got, especially when we took a look once at the exhibitors of live stock and almost invariably it was a young man making the exhibit. Iowa easily has more successful farmers and stock raisers among its young men than any state in the union and we think that is the reason the state ranks so high as an agricultural state.

WOMAN'S WORK AT THE IOWA STATE FAIR.

From a woman's standpoint the Iowa State Fair just closed was the most successful yet known. There was so much to see, in three entire days one could get over the grounds nicely; but if only one day could be spent, still it was worth the effort to have the one day, and by making the most of each hour a great deal of valuable information could be gathered, a great deal that was useful and beautiful could be seen, and if one went home aching from over-exhaustion, still would they say, "But it was worth all it cost. I wouldn't have missed it for anything."

The weather was ideal throughout, not too hot for comfort, as state fair week frequently has been in years past. And one of the greatest sights of all was the people. Such crowds and crowds of them! Whole families together, fathers and mothers, each with a baby in arms, and several little steps clinging close to their side; happy sweethearts, hand in hand; brides and grooms, of whom fair week always brings an unusual large number to the capital. Imagine seventy thousand people on the grounds in one day, each building, tent and street filled solidly with a mass of good-natured, jolly crowds, ever changing and moving, eager to see it all. And then I thought of the thousands and thousands of wives and daughters in Iowa farm homes who were not there, and I wished each one of them might arrange to attend next year, if only for a couple of days, not alone for the change and recreation, but to carry back the inspiration of meeting people, of seeing the latest inventions in domestic science helps, of hearing about everything pertaining to the farm, indoors and out, to every department of women's as well as men's work.

Des Moines certainly had reason to be proud of the excellent treatment accorded the strangers within her gates. There were beds for all who applied, and an abundance of good things to eat; citizens everywhere went out of their way to show a courtesy, to direct strangers where to go, to explain about public buildings and the parks. The beautiful state house, the historical building, Polk county's splendid new court house, the many new office buildings along the business thoroughfares, the fine department stores, and numerous others smaller, but equally complete in their respective lines, were visited by throngs early and late, and the concessions made for the comfort of the fair visitors will be remembered with the beauty of the buildings, Ingersoll, our popuar amusement park, vied with the attractions at the fair grounds, and was crowded to its utmost capacity each afternoon and evening. With the state fair at the extreme eastern limits of the city, and Ingersoll park west of town, the city railway handled the traffic with remarkable ease, and without accident. Considering the jam at the gates each day the few minutes delay in loading a car was not worth mentioning, and the street car company deserves unstinted praise.

Within the gates one passed between long rows of refreshment booths extending on either side of the wide brick walk, clear to the stock pavilion. If you turned off to the right, you entered the semi-circle of stock barns, where the aggregation of blooded and high grade animals, cattle and horses, has never been equalled at any fair in the world.

Because this is from a woman's standpoint, I cannot particularize, but I want to mention in passing the splendid horses exhibited by the Armour company, with heavily gold-plated harness and mammoth wagon, and the barn full of cunning little Shetland ponies, which every child wanted to see.

If you turned to the left instead of to the right, you wandered along among the side shows, with their free exhibitions—mostly noise—every few minutes, to attract a crowd. Chief among these was the Igorrotte village, where swarthy savages from the Philippine were on exhibition, portraying the customs and characteristics of their tribe.

If you kept straight on up the walk—and in passing it might be noticed that there are walks of brick or cement now connecting most of the buildings, so that the weather is not at all the serious problem it was a few years ago—you reached the fine stock pavilion, where the judging occupied all the middle hours of each day, and in all that vast building it was difficult at all times to obtain even standing room, for women as well as men, coming in just to look, became interested enough to stay for hours at a time.

West of the stock pavilion has been erected this year an administration building that would be a credit anywhere. On the settees that lined the wide verandas encircling the building on all four sides, many hundreds of people daily found rest and a delightful place from which to view the grounds. Within, in addition to spacious private offices used by officers of the association, was a wide court, resembling a hotel lobby, with a fountain in the center, and opening off this court were writing and rest rooms. In numerous quarters provision was made for the comfort of visitors, and upon the hill beyond the exposition building, the large hall formerly devoted to horticulture was given over this year to rest rooms, a nursery, where babies could be checked in care of competent nurses, an emergency hospital and doctor's office.

The exposition building contained so much of real interest it really seemed a pity so much space should be devoted to fakirs, cheap jewelry, and cheaper souvenir stands. There were the same knives, with a pocketbook thrown in, positively worth a dollar, yours for the sum of twenty-five cents; there were shells, cheap bracelets and beads, glassware marked free, fortune tellers, and all the popular fakes known. And sandwiched in between all these were exquisite displays of hand-painted china, case after case of finest needlework, embracing almost every known stitch in embroidery, drawn work, all kinds of fancy work, knitting, crocheting; a variety of pieced quilts, elaborate in design and finely quilted; sofa pillows, beautiful fancy ones to look at, simple ones that appealed to one's sense of harmony and restfulness; exquisite hand wrought underwear and children's clothing, in which any woman's heart would delight; all these, and much more, you found by dodging cheap souvenir stands. Many of our local merchants maintained stands in exposition hall, also, and visitors could judge from the beauty of their goods displayed there the pleasure a visit to their stores in the city would afford.

One-half of the east wing of the exposition hall was devoted to a model cottage, presented for public inspection by the domestic science department of the Iowa State College, Ames. The decorations and furnishings were by local firms, under the supervision of the college instructors. There were four rooms, living room, dining room, kitchen and bed room. The wall decorations of the first named, wood brown, with ceiling of a warm yellow tint, harmonized with the plain, substantial mission furnishing. The curtains also were yellow, with inner curtains of thin white swiss. In the dining room also mission furniture was used, the mural decoration being in shades of green. Plate rails are tabooed as unsightly and dust-gatherers besides. The bed room furnishings were blue and white, simple and dainty and cool looking. The kitchen I own, was a disappointment to me. There was nothing to mark it a model kitchen, no new ideas to be carried home by interesed hosewives. The whole aim of the model cottage was simplicity, durability, harmonious arrangement, and the questions asked and the interest shown proved that the average woman visitor to the great Iowa fair is, above all else, a home-maker.

In a corner of the little cottage formerly known as the secretary's office, where the Iowa State College made good its claim as a great agricultural institution, the domestic science department devoted a tiny portion of wall space to an exhibit used in extension work, bottles showing relative food values, and the like. Then there was a case in which women were especially interested. The domestic science teachers have simplified the infant's first wardrobe to the plainest articles possible, yet very daintily made, easy laundering being one of the main considerations, and the outfit, displayed in a glass show case, was taken out many times each day for closer inspection by interested mothers. The soft flannels were hand-finished, the seams cat-stitched in silk or bound with silk tape.

There was the little shirt band, the skirt fastened over the shoulders with two pearl buttons, the night gown made to draw up in a bag below the feet—all these of softest flannel. The dresses were noticeable for length, being very short, and very plain, two very sensible ideas for first clothes. The teacher in charge of the exhibit said the cost of such an outfit had not been estimated, although it would be interesting to know.

Cookery forms such an important part of a housewife's daily life it was not surprising that the bread and cake exhibit proved one of the attractions that always held a crowd. Women struggled for a place before the long glass cases, or waited patiently until they could slip into the front row. And after the awards had been made, comment was not always in favor of the judge's decision. Many of the cakes looked fine, but there were others that were coarser grained, yet bore a red or blue card. The only doughnuts exhibited were by the same woman. They were in two glass jars, cut extra large and dipped in coarse granulated sugar. In fact they looked as though they might have been bought at any bake shop. That they received the awards was because they were the only ones in their class. But as a whole the bakings were creditable to Iowa cooks, as were also the jellies, jams and preserves.

To go into detail regarding the exhibits would require more time and space than I command. But I noted two or three novelties that if perfected might simplify woman's work some day. There was a combination range, in which you could build a coal fire to get breakfast, then when the kitchen was warmed, throw the grate, turn two gas burners into the fire box, and while using one burner for cooking you could, by keeping the rest of the lids on to retain the heat, boil a teakettle on the back of the range, just the same as if the hot coals had been retained. There were kitchen cabinets that were marvels of completeness, everything needed in cooking being right at your hand. Fireless cookery was demonstrated by airtight wooden chests, containing one, two or three compartments, though for that matter an old trunk converted into a hay box, if airtight, would serve the purpose equally well. Dish washers were in operation, filled with hot soapy water and a few pieces of heavy stone china. Anyone, a child even, could turn the handle, similar to a washing machine. It seemed to me it might be useful in hotel or restaurant kitchens, but most housekeepers would prefer the good old way. I saw a steam cooker, however, it would be a joy to own. Only the other day we wanted to steam a chicken, and found that the ordinary size steamer lacks depth. This cooker would go over an ordinary burner, and would hold a turkey or a ham. Or it could be used to cook three different dishes at one time, and it was positively guaranteed odorless.

LIVE STOCK AT IOWA STATE FAIR.

The live stock industry of the state of Iowa put forward last week, an exposition of pure bred animals that stands without a peer in the history of live stock shows.

Few people realize the wonderful progress and development that have been made in the brief period of half a century that has elapsed since the establishment of the Iowa state fair. Few realize that during that time there have been perfected breeds of cattle, hogs and horses previously unknown, or only in a crude starting form. Yet these are facts, and the Iowa State Fair, in connection with kindred organizations, is to a very large degree responsible for the rapidity of the advancement. It is true that Iowa soil products are, to a greater extent than those of any like territory, particularly adapted to this growth and improvement of domestic animals, but the oportunity for comparison and the spur of competition given by the show have been the dominating influence in the forward movement that produced the wonderful exhibition of last week.

Five thousand head of the various breeds congregated for the competitions, taxing the housing facilities to the limit. The notable increases were in the cattle, horse and sheep departments. Some interesting facts concerning the numbers of cattle and swine are given in a table that appears elsewhere on this page, and the figures are in some measure a barometer of the shifting popularity of the different breeds, or the existing business conditions.

In the cattle division there was a magnificent display. The marked increase brought an unusual number of more than ordinarily good specimens of the various breeds, showing the general greater excellence to be found in Iowa herds. There was a much smaller proportion of imported animals in competition than ever before, nor was there any outstanding merit in this class. The condition is a most gratifying one, indicating as it does that the necessity of dependence upon the old country for high class breeding stock no longer exists in any degree which would imperil our industry should importations be entirely discontinued. In particular does this situation impress itself in the class of fat cattle inaugurated at the Iowa State Fair. Gentlemen who have made careful inspection of Scotch and English shows advise us that the little ring at our Iowa State Fair does not suffer by the comparison. The block being the objective view in all cattle operations, it would seem that this argument in our behalf is conclusive.

The horse department attracted a great deal of attention, particularly that devoted to the draft breeds. While there were many importers in evidence with a line-up of some of the best animals to be found in England, Scotland, France and Belgium, there were also a prominent bunch of American breeders who were able to compete in the strongest rings and to do credit to themselves and the breeds they represented. The horse business has been getting down to a more practical basis. Farmers have been educating themselves in this direction until today in the purchase of breeding animals they are influenced by actual merit of the stock rather than the old-time glitter and hurrah that made up the show rings. We are producing good horses, and every year the importers find it more difficult to find those which have merit and strong characteristics demanded by our home breeders. In the sections devoted to driving, coach, carriage and saddle horses, there was warm competition and some most excellent specimens were represented. The judges were strong in their commendations of these latter classes, which, being almost purely American bred, and largely of Iowa, adds to the high appreciation in which they are held.

The splendid new swine pavilion was, as usual, filled with the best of the various breeds. The total number in the show, however, was a couple hundred less than last year. It was unfortunate perhaps that quite a considerable number of breeders reserved and paid for pens and then failed to make their appearance at the fair, thus barring out a large number of other men who would gladly have been present and who had in fact been refused admittance because the pens had all been disposed of. However, it continues to be the greatest hog show on earth. There was a marked absence of high fitting this year except in one or two herds that are conducted by what we may call professional show men. The high price of feed operated against superfatted hogs, but the buyer of breeding stock will no doubt be the beneficiary from this condition. There was nothing of a sensational character in any of the shows. In fact, in most breeds there was lacking some of the toppyness of finish and high character that have hitherto made the Iowa State Fair notable. An exception to this rule, however, applies to the Chester Whites, which breed presented the strongest rings of the week. Berkshire breeders increased their numbers over previous years through active work of their state orgaization and got together a highly creditable showing. A new feature in the swine department was the Hampshire or thin rind breed given its first classification here this year. Gentlemen engaged in the forwarding of the interests of that breed have been particularly aggressive in their efforts to put the Hampshire prominently before the public, and so brought about a hundred and fifty head to this fair. But one herd of this number came from Iowa. While this breed doubtless has advantages that justify its existence, the average farmer frequently asks what its advantages are over the more firmly established breeds.

In the sheep rings there was more enthusiasm among our home breeders than has been noticeable for quite a number of years. Iowa men got out in greater numbers and with a higher order of individual merit. In most classes the judges faced specimens of more than ordinary quality. It was particularly apparent that Iowa breeders who at one time were loth to show in open classes, this year never hesitated to get into the world's competition. A hopeful aspect is here shown for the betterment of Iowa's flocks, and if we mistake not in the near future there will be a decided increase in flocks in this state and quality will in no wise suffer thereby.

The world must bow to the aristocracy of Iowa live stock as seen at the Iowa State Fair. The supremacy of its products is already firmly established in foreign countries, and it can be but a matter of a few years until the supply of breeding animals of the world must be drawn from the sections from which come the animals that make up this exhibit.

It is a flattering testimonial to the intelligence of the Iowa farmers, and their aptness in recognizing the important position that good live stock occupies in the promotion of their prosperity, that every ring of stock was surrounded by close and critical observers, and men too keenly alive to the existence of qualities that were the turning points on the decision of close points.

The fairs, the live stock organizations, and the agricultural colleges have, in their combined efforts, succeeded in instilling into the minds of farmers more correct ideals of animal form, and the knowledge thus gained is put to the test in an examination of the stock assembled at the fair.

In the ambition to produce the highest character in all kinds of meat animals we fear that the dairy cow has been lost sight of by many who formerly made creditable showings at this fair. We are on the eve of better things in dairying, such as the silo, the milking machine, and there is no reason why the dairy cow should not keep pace with all else that is for improvement in Iowa stock conditions. The exhibit of dairy cattle was a little lacking in numbers. There is no reason why this waning should take place, for those interested in dairying were just as anxious as ever to see the changes that were taking place for the better. We trust our dairy cattle breeders will see to it that their interests are well represented at coming fairs.

The work of the student classes from the Iowa Agricultural College was of a most useful and instructive character, and must have great influence on the coming generation of stock growers. A prominent breeder freely expressed it as his opinion that the work of these students compared quite favorably with that of judges who were known as practical breeders.

Taken all in all there was general satisfaction with the decisions of the judges. In no departments except that of swine were there complaints. In this department, however, there has been so much expression of criticism on the part of exhibitors that the fair management are inclined to consider the present instances in the light of a joke. The number of uninformed exhibitors in some classes doubtless has much to do with the condition. It is also aggravated by the aggressiveness of certain interested outsiders, who really have no right to be in the rings.

AWARDS IN LIVE STOCK DEPARTMENTS

Iowa State Fair and Exposition

1908

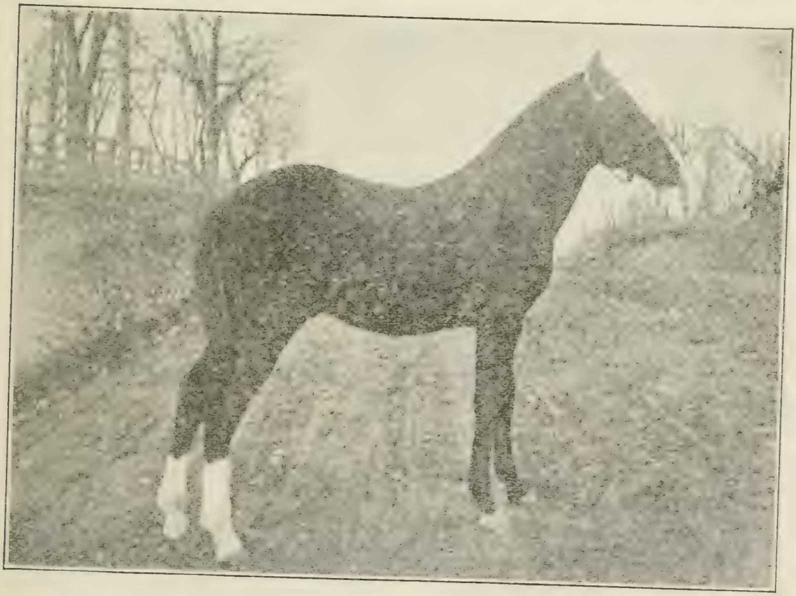
HORSE DEPARTMENT.

SUPERINTENDENT..............................C. F. CURTISS.

STANDARD BRED.

EXHIBITORS.

Horace Anderson, Des Moines, Iowa; A. L. Bergsten, Winfield, Iowa; E. J. Brouhard, Colo, Iowa; John W. Bruere, Tracy, Iowa; Tom Bass, Mexico, Mo.; Frank Bowen, Des Moines, Iowa; R. S. Barr, Adel, Iowa; J. L. Betts, Ankeny, Iowa; Seth Cook, Mt. Hamill, Iowa; F. C. Copeland, Des Moines, Iowa; C. E. Baxter, Des Moines, Iowa; Alex Dallas, Atlantic, Iowa; Elmore A. Elliott, Des Moines, Iowa; Chas. Henley, Des Moines,



First Prize Standard-Bred Horse Foal,
Iowa State Fair and Exposition, 1908.

Iowa; E. H. Jackson, Jefferson, Iowa; Tom James, Des Moines, Iowa; Chas. C. Judy, Tallula, Ill.; J. A. Mason, Carlisle, Iowa; C. E. Monahan, Des Moines, Iowa; L. H. Pickard & Bro., Harlan, Iowa; Shaw Bros., Mitchellville, Iowa; M. E. Spring, Des Moines, Iowa; Otto Schroeder, Des Moines, Iowa; Wilson Bros., Menlo, Iowa; Winchester Stock Farm, Winchester, Ill.; James Watt, Des Moines, Iowa.

AWARDS.

JUDGE....................JOHN A. CRAIG, San Antonio, Texas.

Stallion Four Years Old and Over—First, Hail Cloud 23606, James Watt; second, McNaught 37375, Winchester Stock Farm; third, Barondale 20184, Tom James; fourth, Sinclair 1st 38671, Chas. C. Judy; fifth, Peter Kane (36969) 5591, Alex Dallas.

Stallion Over Three and Under Four—First, Pancetto 48336, Elmore A. Elliott; second, Axindale 44449, Shaw Bros.

Stallion Over Two and Under Three—Fred Mc 47790, Winchester Stock Farm; second, Colonel Ale 47947, A. L. Bergsten; third, Convictor 48029, E. H. Jackson.

Stallion Over One and Under Two—First, Charley Mc 47788, Winchester Stock Farm; second, Burnie Brino 46830, E. J. Brouhard; third, Vanline 47416, E. J. Brouhard.

Horse Foal—First, Oh No, L. H. Pickard; second, Prairie Hail, Frank Bowen; third, Prince W., E. J. Brouhard.

Mare Four Years Old or Over—First, Petra M., Tom Bass; second, Peak's Baby Vol 17, Winchester Stock Farm; third, Glacine Vol. 18, Winchester Stock Farm; fourth, Anna Rietta, John W. Bruere.

Filly Over Three and Under Four—First, Helen Thomas, Vol. 14, Winchester Stock Farm; second, Baby Axineer, Vol. 17, Shaw Bros; third, Lou Neeley, Winchester Stock Farm.

Filly Over Two and Under Three—Ganahl's Baby, Vol. 18, Winchester Stock Farm.

Filly Over One and Under Two—First, Verilla, Vol. 18, E. J. Brouhard; second, Sunray, F. C. Copeland.

Mare Foal—First, Mary Consul, John W. Bruere; second, Perfect Lady, E. J. Brouhard.

Get of Stallion—First, Winchester Stock Farm; second, E. J. Brouhard; third, Winchester Stock Farm.

Produce of Mare—First, Shaw Bros.; second, Shaw Bros.; third F. C. Copeland.

AMERICAN CARRIAGE HORSES.

EXHIBITORS.

A. L. Bergsten, Winfield, Iowa; Chas. S. Bradshaw, Des Moines, Iowa; E. J. Brouhard, Colo, Iowa; John W. Bruere, Tracy, Iowa; Seth Cook, Mt. Hamill, Iowa; Alex Dallas, Atlantic, Iowa; Elmore A. Elliott, Des Moines, Iowa; E. H. Jackson, Jefferson, Iowa; Chas. C. Judy, Tallula, Ill.; C. E.

Monahan, Des Moines, Iowa; J. A. Mason, Carlisle, Iowa; W. C. McClanahan, Girard, Ill.; L. H. Pickard & Bros., Harlan, Iowa; Shaw Bros., Mitchelville, Iowa; P. F. Smith, Montezuma, Iowa; Winchester Stock Farm, Winchester, Ill.

AWARDS.

Judge..................Geo. M. Rommell, Washington, D. C.

Stallion Four Years Old or Over—First, Morgan Panic 5003, P. F. Smith; second, Peter Kane (36969) 5591, Alex Dallas; third, S. Russell 1802, C. E. Monahan.

Stallion Three Years Old and Under Four—First, Pancetto 48336, Elmore A. Elliott; second, Axindale 44449, Shaw Bros.

Stallion Two Years Old and Under Three—First, none; second, Fred Mc 49790, Winchester Stock Farm; third, Colonel Ale 47947, A. L. Bergsten.

Stallion One Year Old and Under Two—First, Vanline 47416, E. J. Brouhard; second, Charlie Mc 47788, Winchester Stock Farm; third, Van Foxy 5415, P. F. Smih; fourth, Burnie Brino 46830, E. J. Brouhard.

Stallion With Three of His Get of Either Sex—First, P. F. Smith; second, Winchester Stock Farm; third, Chas. C. Judy.

Mare Four Years Old and Over—First, Glacine, Vol. 18, Winchester Stock Farm; second, Peak's Baby, Vol. 17, Winchester Stock Farm; third, Black Bess, C. E. Monahan.

Mare Three Years Old and Under Four—First, Helen Thomas, Vol. 17, Winchester Stock Farm; second, Baby Axineer, Vol. 17, Shaw Bros.

Mare Two Years Old and Under Three—First, Ganahl's Baby, Vol. 18, Winchester Stock Farm.

Mare One Year Old and Under Two—First, Verilla, Vol. 18, E. J. Brouhard; second, Gertrude, P. F. Smith.

Mare and Foal of Either Sex—First, John W. Bruere; second, P. F. Smith; third, E. J. Brouhard.

Foal Under One Year Old, Either Sex—First, Mary Consul, John W. Bruere; second, ———— E. J. Brouhard; third, ———— E. J. Brouhard.

GENTLEMEN'S DRIVING HORSES AND ROADSTERS.

EXHIBITORS.

Horace Anderson, Des Moines, Iowa; John W. Bruere, Tracy, Iowa; Tom Bass, Mexico, Mo.; F. C. Copeland, Des Moines, Iowa; T. C. Evans, Palo, Kan.; Chas. C. Judy, Tallula, Ill.; C. E. Monahan, Des Moines, Iowa; W. C. McClanahan, Girard, Ill.; Shaw Bros., Mitchellville, Iowa; Otto Schroeder, Des Moines, Iowa; Winchester Stock Farm, Winchester, Ill.; Wilson Bros., Menlo, Iowa.

AWARDS.

JUDGE..................JOHN A. CRAIG, San Antonio, Texas.

Driving Team (Pair) to Pole—First, Napton's Pride and Aneas, Winchester Stock Farm; second, Harry C. and Cynthia, Chas. C. Judy; third, Petra M. and Jack O'Hearts, Thos Bass; fourth, Elsie May and Sir L, Shaw Bros.

Single Driver to Harness—First, Petra M, Thomas Bass; second, Harry C, Chas. C. Judy; third, Aneas, Winchester Stock Farm; fourth, Napton's Pride, Winchester Stock Farm.

HARNESS HORSES, AMERICAN OR FOREIGN BRED.

EXHIBITORS.

Chas. S. Bradshaw, Des Moines, Iowa; T. C. Evans, Palo, Kan.; Chas. C. Judy, Talulla, Ill.; C. E. Monahan, Des Moines, Iowa; Pabst Stock Farm, Oconomowoc, Wis.; Shaw Bros., Mitchellville, Iowa; Winchester Stock Farm, Winchester, Ill.; Wilson Bros., Menlo, Iowa.

AWARDS.

JUDGE...................W. M. MARSHALL, Chicago Illinois.

Matched Heavy Carriage or Coach Team—First, Guardsman and Island Buttercup, Pabst Stock Farm; second, ———— T. C. Evans; third Elsie May and Sir L, Shaw Bros.; fourth, Jessie and Jerry, C. E. Monahan.

Single Mare or Gelding—First, Guardsman, Pabst Stock Farm; second, Harry C, Chas. C. Judy; third, My O Me, Thos. Bass; fourth, Elegance 2d 17438, Pabst Stock Farm.

Tandem Team—First, Guardsman and Lady Lou, Pabst Stock Farm.

SADDLE HORSES.

EXHIBITORS.

Chas. S. Bradshaw, Des Moines, Iowa; Thos. Bass, Mexico, Mo.; T. C. Evans, Palo, Kan.; Chas. Glover, Springfield, Ill.; W. W. Gill & Son, Packwood, Iowa; Chas. C. Judy, Tallula, Ill.; C. E. Monahan, Des Moines, Iowa; W. C. McClanahan, Girard, Ill.; H. D. Parsons, Newton, Iowa; R. S. Ross, Des Moines, Iowa; Adam Sterling, Des Moines, Iowa.

AWARDS.

JUDGE.....................R. E. JONES, *Webster City, Iowa.*

Gelding Four Years or Over—First, King, Thos Bass; second, King Crow, Chas. C. Judy; third, Red King, T. C. Evans; fourth, Shamrock Lad, Adam Sterling.

Gelding Three Years Old and Under Four—First, Chestnut, Thos. Bass.

Stallion Four Years Old or Over—First, Alexander Jester 1979, Chas. C. Judy; second, Forest Rose, Thos. Bass; third, Chief, Jr., Chas. Glover; fourth, S. Russell 1802, C. E. Monahan.

Stallion Three Years Old and Under Four—First, Brown Alfurd, Thos. Bass; second, Rex Alexander 3222, Chas. C. Judy.

Mare Four Years Old or Over—First, Cynthia, Chas. C. Judy; second, Rose Bud, Chas. S. Bradshaw; third, Cuba, H. D Parsons.

Mare Three Years Old and Under Four—First, Ida McDonald, Thos. Bass.

Champion Stallion, Mare or Gelding—First, King, Thos. Bass.

Stallion and Four of His Get—First, Chas. C. Judy.

WALK, TROT OR CANTER.

Stallion, Mare or Gelding, Any Age—First, Wallace Cole, Chas. Glover; second, ———— Chas. C. Judy; third, ———— Chas. C. Judy; fourth, Louis A, Thos. Bass.

COMBINED HARNESS AND GAITED SADDLE HORSES.

Stallion, Mare or Gelding, Any Age—First, King, Thos. Bass; second, Rex Alexander 3222, Chas. C. Judy; third, Cynthia, Chas. C. Judy.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding—First, Louis A, Thos. Bass; second, Artis Demear, Chas. Glover; third, S. Russell 1802, C. E. Monahan.

SHETLAND PONIES.

EXHIBITORS.

Horace Anderson, Des Moines, Iowa; Chas. E. Bunn, Peoria, Ill.; John Donhowe, Story City, Iowa; H. C. Davis, Ames, Iowa; Cassidy & Thompson, Jamaica, Iowa; W. W. Gill & Son, Packwood, Iowa; W. McDonald, Ames, Iowa; H. D. Parsons, Newton, Iowa; Chas. Parmenter, Des Moines, Iowa; W. T. Roberts & Son, Ames, Iowa; Adam Sterling, Des Moines, Iowa.

AWARDS.

JUDGE....................JOHN A. CRAIG, San Antonio, Texas.

Stallion Three Years Old or Over—First, Grandee 4423, Chas. E. Bunn; second, Jack Frost 5734, Chas. E. Bunn; third, Anton 4342, John Donhowe; fourth, Taaggum 6744, Cassidy & Thompson.

Stallion Two Years Old and Under Three—First—Lysander 7072, Chas. E. Bunn.

Stallion or Mare Foal—First, Nasturtium, Chas. E. Bunn; second, King, John Donhowe; third, Trix, W. McDonald; fourth, Nazelle, Chas. E. Bunn.

Mare Three Years Old or Over—First, Lady 2nd, Chas. Parmenter; second, Kessie 7071, Chas. E. Bunn; third, Fairy 4092, Chas. E. Bunn; fourth, Maud D. 6392, John Donhowe.

Mare Two Years Old and Under Three—First, Lottie Isabelle, Chas E. Bunn; second, Lynette 7076, Chas. E. Bunn; third, Dab D. 6422, John Donhowe; fourth, Skip, W. T. Roberts & Son.

Shetland Pony in Harness—First, Grandee 4423, Chas. E. Bunn; second, Jack Frost 5734, Chas. E. Bunn; third, Lady 2nd, Chas. Parmenter; fourth, ———— W. T. Roberts & Son.

Pair Shetland Ponies in Harness—First, Grandee and Prince of Wales, Chas. E. Bunn; second, Jack Frost and Jap, Chas. E. Bunn; third, Lightning and Jester, W. T. Roberts & Son; fourth, Iola and No No G., Cassidy & Thomson.

Four-in-Hand Shetland—First, Chas. E. Bunn; second, Maud D., Pet. D., Teddis and Black Bessie, John Donhowe; third, ———— H. C. Davis.

Tandem Team of Shetlands—First, Grandee and Mate, Chas. E. Bunn; second, Jack Frost and Jap, Chas. E. Bunn; third, Lightning and Jester, W. T. Roberts & Son; fourth, ———— W. T. Roberts & Son.

Shetland Pony Under Saddle—First, Folly, Horace Anderson; second, Kelia, Chas. E. Bunn; third, Lady 2nd, Chas. Parmenter; fourth, Jap 5513, Chas. E. Bunn.

Shetland Stallion and Four of His Get—First, Chas. E. Bunn; second, Chas. E. Bunn; third, John Donhowe; fourth, W. T. Roberts & Son.

Best Five Animals Bred by Exhibitor—First, Chas. E. Bunn; second, Chas. E. Bunn; third, John Donhowe; fourth, H. C. Davis.

PONIES OTHER THAN SHETLAND.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; Chas. E. Davis, Ames, Iowa; W. W. Gill & Son, Packwood, Iowa; Pabst Stock Farm, Oconomowoc, Wis.

AWARDS.

JUDGE..................JOHN A. CRAIG, San Antonio, Texas.

Pony in Harness—First, Zambo, Chas. E. Bunn; second, Elegance IV (1567), Pabst Stock Farm; third, May Flower 1553, Chas. E. Bunn.

Pair of Ponies in Harness—First, May Flower and Leamington, Chas. E. Bunn; second, Czarina and Firebrand, Chas. E. Bunn; third, Juliett and Daisy, W. C. McDonald.

Pony Under Saddle—First, Pompadour, Pabst Stock Farm; second, Lightning, Chas. E. Bunn; third, ———— H. C. Davis.

MORGANS.

EXHIBITORS.

C. T. Ayres, Osceola, Iowa; Alex Dallas, Atlantic, Iowa; Elmer A. Elliott, Des Moines, Iowa; S. B. Mills, Ames, Iowa; P. F. Smith, Montezuma, Iowa; E. T. Waterman, Council Bluffs, Iowa.

AWARDS.

JUDGE..................GEO. M. ROMMELL, Washington, D. C.

Stallion Three Years Old and Over—First, Morgan Panic 5003, P. F. Smith; second, Peter Kane (36969) 5591, Alex. Dallas; third, Foxy Eclipse 5011, C. T. Ayres.

Stallion One Year Old and Under Two—First, Van Foxy, P. F. Smith.

Horse or Mare Foal—First, Merl Morgan, S. B. Mills; second, Lou Morgan, P. F. Smith; third, Vailess, P. F. Smith.

Mare Three Years Old or Over—First, Nellie, S. B. Mills; second, Nettie, S. B. Mills; third, Princess, S. B. Mills.

Get of Stallion—First, P. F. Smith.

Grand Display—Best Five Animals Bred by Exhibitor—First, S. B. Mills; second, P. F. Smith.

HACKNEY.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet, Ill.; Alex Galbraith & Son, Janesville, Wis.; Henry Lefebure, Fairfax, Iowa; Jno. Leitch, LaFayette, Ind.; Pabst Stock Farm, Oconomowoc, Wis.; Trumans Pioneer Stud Farm, Bushnell, Ill.; Jas. G. Tait, Nevada, Iowa.

AWARDS.

JUDGE..............WILLIAM M. MARSHALL, Chicago, Illinois.

Stallion Four Years Old and Over—First, Minwood Majesty, Pabst Stock Farm; second, Kingsland Raincliffe 8213, Truman's Pioneer Stud Farm; third, Dilham Prince, Pabst Stock Farm.

Stallion Over Two Years and Under Three—First, Redskin, Pabst Stock Farm; second, Tollington, Truman's Pioneer Stud Farm; third, Lightning, Chas. E. Bunn.

Stallion Over One Year and Under Two—First, Mormon, Chas. E. Bunn.

Mare Over Four Years Old—First, Elegance 2nd, Pabst Stock Farm; second, Joan, Pabst Stock Farm; third, Island Buttercup, Pabst Stock Farm.

Mare Over Three Years and Under Four—First, Czarina 1836, Chas. E. Bunn; second, Wood Molly 1105, Henry Lefebure.

Filly Over Two Years and Under Three—First, ———— Pabst Stock Farm; second, ———— John G. Tait; third, ———— John G. Tait; fourth, ———— John G. Tait.

Produce of Mare—First, Chas. E. Bunn.

Grand Display—First, Pabst Stock Farm; second, Chas. E. Bunn; third, John G. Tait.

FRENCH AND GERMAN COACH.

EXHIBITORS.

Singmaster Bros., Keota, Iowa; Taylor and Jones, Williamsville, Ill.

AWARDS.

JUDGE....................W. E. PRITCHARD, Ottawa, Illinois.

Stallion Over Three and Under Four—First, Fulcan (1750), Singmaster Bros.; second; Maikranz (39105), Singmaster Bros.; third, Thron (13305) Singmaster Bros.

Stallion Over Two and Under Three—First, Menno, Jr., 4621, Taylor & Jones.

Mare Over Four Years Old—First, Recha (3446), Singmaster Bros.; second, Gitana (14420), Singmaster Bros.

Filly Over Three and Under Four—First, Sundicap (5001), Singmaster Bros.

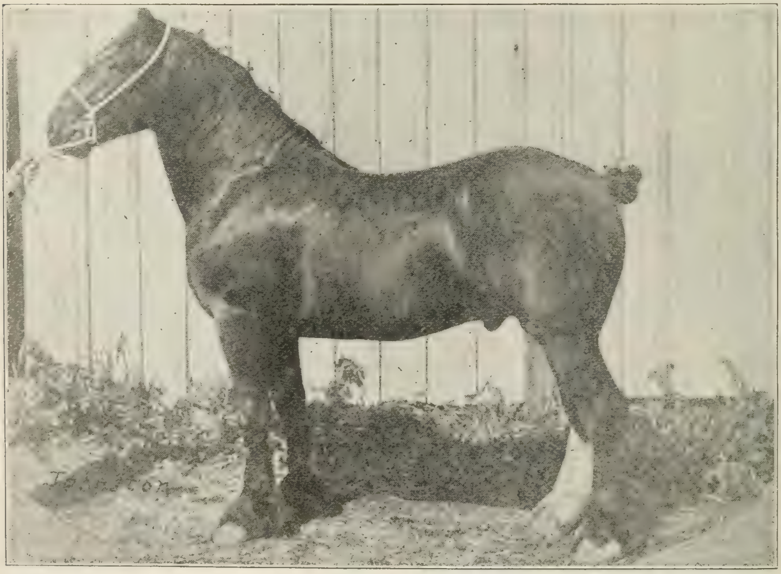
Filly Over One Year and Under Two—First, Modest Lady, Pabst Stock Farm; second, May Apple 1837, Chas. E. Dunn.

Grand Display—Best Five Animals Owned by Exhibitor—First, Singmaster Bros.

CLYDESDALE.

EXHIBITORS.

Alex Galbraith & Son, Janesville, Wis.; W. V. Hixson, Marengo, Iowa; John Leitch, LaFayette, Ind.; James Pedley, Algona, Iowa; A. G. Soderburg, Osco, Ill.; John G. Tait, Nevada, Iowa.



First Prize Three Year Old Clydesdale Stallion,
Iowa State Fair and Exposition, 1908.

AWARDS.

JUDGE....................W. E. PRITCHARD, Ottawa, Illinois.

Stallion Four Years Old and Over—First, Baron Clifton 12611 (13252), W. V. Hixson; second, Baron's Voucher (12041), Alex. Galbraith & Son; third, Quartermaster 12709, John Leitch; fourth, Alloa Lad (12801), Alex. Galbraith & Son; fifth, Argosy (11247), Alex. Galbraith & Son; sixth, Lord Stormont 13220, John Leitch.

Stallion Over Three and Under Four—First, Bakewell, Alex. Galbraith & Son; second, Merry King 13229, John Leitch; third, Great Hill Chief, Alex. Galbraith & Son; fourth, Grand Triumph 12047, A. G. Soderberg.

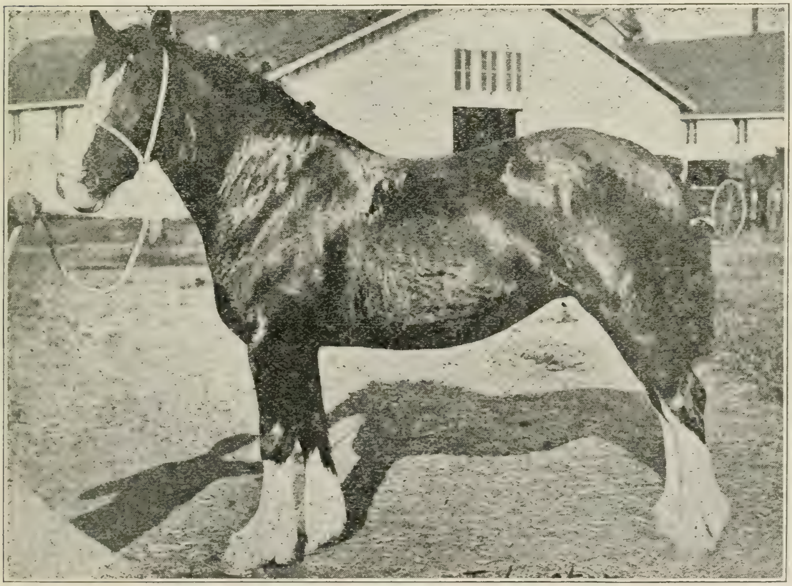
Stallion Over Two and Under Three—First, Heather Blossom (14161), Alex. Galbraith & Son; second, Baron Cowdor (13975), Alex. Galbraith & Son; third, Playwright 13224, John Leitch.

Stallion Over One and Under Two—First, Dinwoody Star, Alex. Galbraith & Son; second, Auditor 13368, Alex. Galbraith & Son; third, Cragsmen, Alex. Galbraith & Son.

Horse Foal—First, Forest King, James Pedley.

Stallion Under Three Years Old, Bred by Exhibitor—First, Forest King, James Pedley.

Mare Over Four Years Old—First, Thorn Cliffe Belle 12458, A. G. Soderberg; second, Osco Sweetness, A. G. Soderberg; third, Queen of the Clydes 10934, James Pedley; fourth, May Blossom 19519, John Leitch.



Champion Clydesdale Mare.
Iowa State Fair and Exposition, 1908.

Filly Over Three and Under Four—First, Palmerston's Darling 12332, W. V. Hixson; second, Osco Bloss 12056, A. G. Soderberg; third, Daisy Belle, John G. Tait; fourth, Ardyne Daisy 20772, John Leitch.

Filly Over Two and Under Three—First, Peach Blossom 12584, W. V. Hixson; second, Edna 20774, John Leitch; third, Winsome Princess 12841, A. G. Soderberg; fourth, Confidante, Alex. Galbraith & Son.

Filly Over One and Under Two—First, Lady Palmerston 13565, W. V. Hixson; second, Fair Ophelia 20775, John Leitch; third, Wedelberg Bell, John G. Tait; fourth, Osco Lady Baron, A. G. Soderberg.

Mare Foal—First, Princess Clifton, W. V. Hixson.

Mare Over Three Years Old, Bred by Exhibitor—First, Palmerston's Darling 12332, W. V. Hixson; second, Osco Bloss 12056, A. G. Soderberg; third, Queen of the Clydes 10934, James Pedley.

Mare Under Three Years Old, Bred by Exhibitor—First, Peach Blossom 12584, W. V. Hixson; second, Lady Palmerston 13565, W. V. Hixson; third, Princess Clifton, W. V. Hixson; fourth, Osco Tily 12784, A. G. Soderberg.

Produce of Mare—First, A. G. Soderberg; second, W. V. Hixson.

Grand Display—First, W. V. Hixson; second, A. G. Soderberg.

ENGLISH SHIRES.

EXHIBITORS.

Bliss Bros., Diagonal, Iowa; Frank Berkey, Ankeny, Iowa; Robt. Burgess & Son, Wenona, Ill.; Wm. Crownover, Hudson, Iowa; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet, Ill.; Singmaster Bros., Keota, Iowa; A. G. Soderberg, Osco, Ill.; Taylor & Jones, Williamsville, Ill.; Truman's Pioneer Stud Farm, Bushnell, Ill.; Watson, Woods Bros. & Kelley, Lincoln, Neb.; Union Wrecking Co., Des Moines, Iowa.

AWARDS.

JUDGE....................W. E. PRITCHARD, Ottawa, Illinois.

Stallion Four Years Old and Over—First, Waresley Defiance 9304, Taylor & Jones; second, Bury Radium 23113, Truman's Pioneer Stud Farm; third, Moulton Florizel 23514, Finch Bros.; fourth, Togo (22864) 9798, Watson, Woods Bros. & Kelly; fifth, Dunsmore Rector 9215 (23277), Robt. Burgess & Son; sixth, Wiseman 2nd 24812, Truman's Pioneer Stud Farm.

Stallion Over Three and Under Four—First, Ashwell Besswood 9821 (23957), Robt. Burgess & Son; second, Shelford Friar (24608), Truman's Pioneer Stud Farm; third, Burg Magnet (24102), Truman's Pioneer Stud Farm; fourth, Blaisdon Carbon (24015) 9799, Watson, Woods Bros. & Kelly; fifth, Buscat Viotex, Wm. Crownover; sixth, King Alfred 5th 9310, Taylor & Jones.

Stallion Over Two and Under Three—First, Curlien Frank (25104), Truman's Stud Farm; second, Shelford Friar, Wm. Crownover; third, Finstall Triumph 9822 (25199), Robt. Burgess & Son; fourth, Givyn Lad 9223, A. G. Soderberg.

Stallion Over One and Under Two—First, Osco Baron Prince, A. G. Soderberg; second, Dunsby Electric, Vol. 30, Truman's Pioneer Stud Farm.

Stallion Foal—First, ———— Frank Berkley

Stallion Over Three Years Old, Bred by Exhibitor—First, ————, Finch Bros.

Stallion Under Three Years Old, Bred by Exhibitor—First, Osco Baron Prince, A. G. Soderberg; second, Keota Duke, Singmaster Bros.

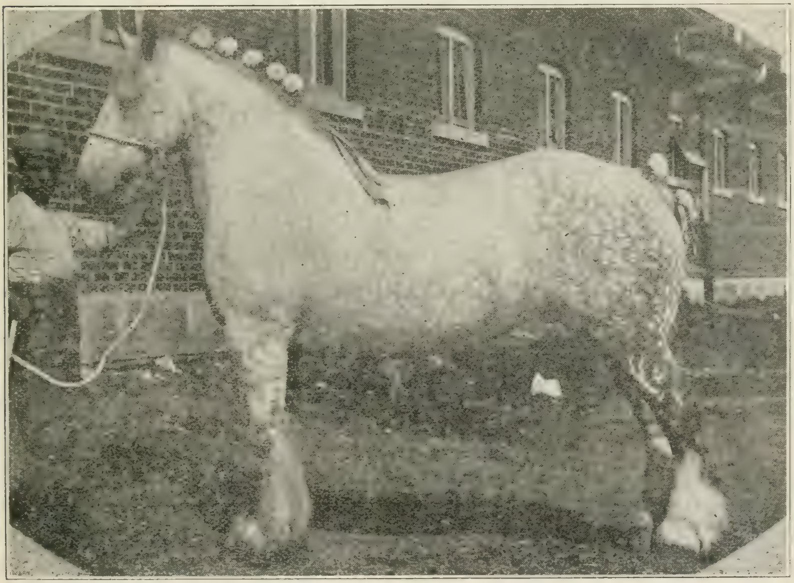
Mare Over Four Years Old—First, Wrydelands Starlight (37804), Truman's Pioneer Stud Farm; second, Enfield Fuchsia (21754), Truman's Pioneer Stud Farm; third, Queen of Hearts 6384, Frank Berkey; fourth, Glory of Verona 5823, Finch Bros.; fifth, Osco Spinet 7084, A. G. Soderberg.

Filly Over Three and Under Four—First, North Melody, Wm. Crownover; second, Cranmore, Wm. Crownover; third, Damset's Queen, Wm. Crownover; fourth, Isa 9385, Finch Bros.

Filly Over Two and Under Three—First, Arbutus Berry, Wm. Crownover; second, Queen of the Rose 8728, A. G. Soderberg.

Filly Over One and Under Two—First, Verona Lillie 9585, Finch Bros.; second, Duchess, Union Wrecking Co.

Mare Foal—First, Verona May 9599, Finch Bros.; second, Osco Easter, A. G. Soderberg.



First Prize Shire Mare.
Iowa State Fair and Exposition, 1908.

Mare Over Three Years Old, Bred by Exhibitor—First, ————, Finch Bros; second, Osco Spinet 7084, A. G. Soderberg.

Mare Under Three Years Old, Bred by Exhibitor—First, ————, Finch Bros.; second, Osco Duches, A. G. Soderberg; third, ————, Finch Bros.

Get of Stallion—First, A. G. Soderberg; second, Finch Bros.

Produce of Mare—First, Finch Bros.; second, A. G. Soderberg.

Grand Display—First, Finch Bros.; second, A. G. Soderberg.

PERCHERONS AND FRENCH DRAFT.

EXHIBITORS.

Robt. Burgess & Son, Wenona, Ill.; Loren Dunbar, Earlham, Iowa; Wm. Crownover, Hudson, Iowa; Cresap Bros., Altoona, Iowa; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet, Ill.; S. B. Frey, Ames, Iowa; Alex. Galbraith & Son, Janesville, Wis.; J. N. Harrison, Herman, Neb.; Chas Irvine, Ankeny, Iowa; J. E. Junk, Stuart, Iowa; H. G. McMillan, Rock Rapids, Iowa; Maasdam & Wheeler, Fairfield, Iowa; F. O. Nutting & Son, Indianola, Iowa; Singmaster Bros., Keota, Iowa; W. C. Strait, Keosauqua, Iowa; W. F. & Ulda Igo Sinnard, Carlisle, Iowa; Adam Stamm, Carlisle, Iowa; Taylor & Jones, Williamsville, Ill.; Union Wrecking Co., Des Moines, Iowa; Watson, Woods Bros. & Kelly, Lincoln, Neb.; Patterson & Errickson, Worthington, Minn.

AWARDS.

JUDGE..........................PROF. W. J. KENNEDY, Ames, Iowa.

Stallion Four Years Old and Over—First, Aurelia 47085 (62282), Singmaster Bros.; second, Decime 55365 (60587), Robt. Burgess & Son; third, Bonpays, 64190, Adam Stamm & Son; fourth, Alban 46137 (64433), Patterson & Errickson Co.; fifth, Prosperity 15070, Taylor & Jones; sixth, Ciceron (58822) 48663, S. B. Frey.

Stallion Over Three and Under Four—First, Brilliant D., Taylor & Jones; second, Trochu 52480 (68092), Robt. Burgess & Son; third, Closier 53354 (67994) Singmaster Bros.; fourth, Abatvent 52422 (66370), Robt. Burgess & Son; fifth, Loulaba 50782 (68247), Crawford & Griffin.

Stallion Over Two and Under Three—First, Gascon 55373 (71455), Robt. Burgess & Son; second, Guerrier (69388), Singmaster Bros.; third, Gabrias 55368 (69328), Robt. Burgess & Son; fourth, Nobleman 50665, Patterson & Errickson Co.

Stallion Over One and Under Two—First, Bloudin 55417, Robt. Burgess & Son; second, Harcourt 55384 (74115), Robt. Burgess & Son; third, ————, H. G. McMillan.

Stallion Foal—First, Faboin, Patterson & Errickson; second, ————, J. N. Harrison; third, ————, S. B. Frey.

Stallion Over Three Years Old, Bred by Exhibitor—First, Prosperity 15070, Taylor & Jones; second, Vinson 46379, Robt. Burgess & Son; third, Putman 2nd 31784, Taylor & Jones; fourth, Starlight 50860, H. G. McMillan.

Stallion Under Three Years Old, Bred by Exhibitor—First Bloudin 55417, Robt. Burgess & Son; second, Briaro 48857, Maasdam & Wheeler; third, Charlemagne 45556, H. G. McMillan; fourth, Sir Phill 46671, W. T. & Ulda Igo Sinnard.

Mare Over Four Years Old—First, Castille 43913 (61068), Robt. Burgess & Son; second, Soubrette 46204 (61101), Singmaster Bros.; third, Iolanthe 40925, H. G. McMillan; fourth, Ganfrette 51853 (66411), Singmaster Bros.

Filly Over Three and Under Four—First, Columbine 45557, H. G. McMillan; second, Coquette 51831 (66411), Singmaster Bros.; third, Etincelle 52722 (66980), Robt. Burgess & Son.

Filly Over Two and Under Three—First, Sybil 46789, Patterson & Errickson; second, Rozelle 55416, Robert Burgess & Son; third, Adelaide 50646, H. G. McMillan.

Filly Over One and Under Two—First, ————, H. G. McMillan; second, Mazette 55418, Robt. Burgess & Son; third, ————, H. G. McMillan.

Mare Foal—First, Rubina 55117, Cresap Bros; second, Monnie, Adam Stamm & Son; third, Lucy, F. O. Nutting & Son.

Mare Over Three Years Old, Bred by Exhibitor—First, Iolanthe 40925, H. G. McMillan; second, Jessie 54762, H. G. McMillan; third, Fauchette 44029, Maasdam & Wheeler; fourth, Paulette, Robt. Burgess & Son.

Mare Under Three Years Old, Bred by Exhibitor—First, Sybil 46789, Patterson & Errickson; second, ————, H. G. McMillan; third, Razelle, Robt. Burgess & Son; fourth, Adelaide 50646, H. G. McMillan.

Get of Stallion—First, H. G. McMillan; second, Patterson & Errickson; third, Maasdam & Wheeler; fourth, Union Wrecking Co.

Produce of Mare—First, H. G. McMillan; second, Robt. Burgess & Son; third, Patterson & Errickson.

Grand Display—Four Animals Bred by Exhibitor—First, H. G. McMillan; second, Robt. Burgess & Son; third, Patterson & Errickson.

SPECIAL PRIZES BY THE PERCHERON SOCIETY OF AMERICA.

Best American Bred Stallion, Any Age—Brilliant D., Taylor & Jones; second, Blondin 55417, Burgess & Son.

Best American Bred Mare, Any Age—First, Iolanthe 40925, H. G. McMillan; second, Columbine 45557, H. G. McMillan.

Champion Stallion, Open Class—First, Gascon 55373 (71452), Burgess & Son; second, Brilliant D., Taylor & Jones.

Champion Mare, Open Class—First, Castille 43913 (61068), Burgess & Son; second, Erma 46201 (60061), Singmaster Bros.

Best Five Stallions—First, Burgess & Son; second, Taylor & Jones.

Best Three Mares—First, Burgess & Son; second, Singmaster Bros.

Best American Bred Five Stallions—First, Taylor & Jones; second, Patterson & Errickson.

Best American Bred Three Mares—First, H. G. McMillan; second, Patterson & Errickson.

Best Stud (Stallion and Four Mares) Any Age, Owned by Exhibitor—First, Robt. Burgess & Son; second, Singmaster Bros.

Best Stud (Stallion and Four Mares) Bred and Owned by Exhibitor—First, H. G. McMillan; second, Patterson & Errickson.

Four Animals, Get of One Sire, Any Age—First, H. G. McMillan; second, Patterson & Errickson.

Two Animals, Produce of One Mare—First, H. G. McMillan; second, Patterson & Errickson.

Best Stallion, Any Age, Bred and Owned by Exhibitor—First, Robt. Burgess & Son; second, Taylor & Jones.

Best Mare, Any Age—First, H. G. McMillan.

BELGIAN.

EXHIBITORS.

W. B. Donelson, Ogden, Iowa; Crawford & Griffin, Newton, Iowa; Finch Bros., Joliet, Ill.; G. W. Grigsby, Sheldahl, Iowa; Haeley & Ives, Pioneer, Iowa; Chas. Irvine, Ankeny, Iowa; Henry Lefebure, Fairfax, Iowa; J. A. Loughridge, Delta, Iowa; J. W. Jarvis, Morning Sun, Iowa; Maasdam & Wheeler, Fairfield, Iowa; Singmaster Bros., Keota, Iowa; Taylor & Jones, Williamsville, Ill.; Truman's Pioneer Stud Farm, Bushnell, Ill.; A. M. VanSteenberg, Fairfax, Iowa.

AWARDS.

JUDGE....................ROBERT OGILVIE, Chicago, Illinois.

Stallion Four Years Old or Over—First, Parfait Pruyere 3168 (41376), Taylor & Jones; second, Martin Du Hayoir 2445 (31862), G. W. Grigsby; third, Major's Tugel (46584), Finch Bros.; fourth, Togo's Ecous (40986), Finch Bros.; fifth, Honnard Du Fosteau 3088 (29026), A. M. Van Steenberg; sixth, Lion de Vyrickt (37207), Singmaster Bros.

Stallion Over Three and Under Four—First, Martin (46580), Finch Bros.; second, Coquet (41852) 2766, Chas. Irvine; third, Gaillard 2763, Vol. 2, (55719), J. A. Loughridge; fourth, Debonnaise 3166, Taylor & Jones; (55719), J. A. Loughridge; fourth, Debonnaise 3166, Taylor & Jones; fifth, Fougleur (46586), Finch Bros.; sixth, Coudon (45620), Finch Bros.

Stallion Over Two and Under Three—First, Paul de Roe, Vol. 15, Finch Bros.; second, Brilliant 3238, Henry Lefebure; third, Mikado 3167, Taylor & Jones.

Stallion Over One and Under Two—First, Sampson (3285) Vol. 3, W. B. Donelson; second, Coco (46578), Finch Bros.; third, Gouye 2979, W. B. Donelson.

Stallion Foal—First, Pompee, Henry Lefebure.

Stallion Over Three Years, Bred by Exhibitor—First, Bayard 2204, Henry Lefebure.

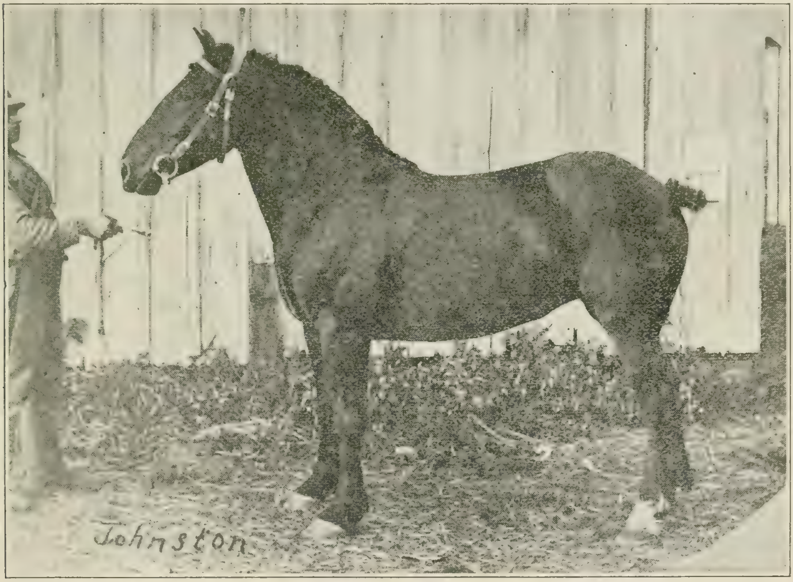
Stallion Under Three Years Old, Bred by Exhioitor—First, Prince II 2946, Henry Lefebure; second, Pompee, Henry Lefebure.

Mare Over Four Years Old—First, Madam II, Vol 2, J. A. Loughridge; second, Noisette 393, Henry Lefebure; third Julie 253, Henry Lefebure.

Filly Over Three and Under Four—First, Mariette (55725) 405, Chas. Irvine.

Filly Over Two and Under Three—First, Mirza de Rhode 396, J. W. Jarvis; second, Rosette de Rhode 395, J. W. Jarvis; third, Flossie 353, Chas. Irvine; forth, Princette 472, Henry Lefebure.

Filly Over One and Under Two—First, Idealiste 635, Henry Lefebure; second, Milliaire 474, Hawley & Ives.



Reserve Champion Belgian Mare,
Iowa State Fair and Exposition, 1908.

Mare Foal—First, Marquise 583, Hawley & Ives; second, Quality, Hawley & Ives.

Mare Under Three Years Old, Bred by Exhibitor—First, Cigarrette 471, Henry Lefebure; second, Princette 472, Henry Lefebure; third, Quality, Hawley & Ives.

Get of Stallion—First, Finch Bros.; second, Henry Lefebure.

Produce of Mare—First, Henry Lefebure; second, Hawley & Ives.

Grand Display—First, Henry Lefebure.

First Prize Begian Stallion,
Iowa State Fair and Expositon, 1908.

DRAFT GELDINGS AND MARES.

EXHIBITORS.

Armour & Co., Chicago, Illinois; Robt. Burgess & Son, Wenona, Illinois; Cresap Bros., Altoona, Iowa; Crawford & Griffin, Newton, Iowa; Loren Dunbar, Earlham, Iowa; Finch Bros., Joliet, Illinois; S. B. Frey, Ames, Iowa; Alex Galbraith & Son, Janesville, Wisconsin; W. V. Hixon, Marengo, Iowa; Henry Lefebure, Fairfax, Iowa; C. E. Jones, Madrid, Iowa; J. W. Jarvis, Morning Sun, Iowa; W. W. Miller, Orilla, Iowa; F. O. Nutting & Son, Indianola, Iowa; A. G. Soderburg, Osco, Illinois; H. G. McMillan, Rock Rapids, Iowa; Patterson & Errickson, Worthington, Minnesota; J. E. Junk, Stuart, Iowa.

AWARDS.

JUDGE.....................ROBERT OGILVIE, Chicago, Illinois.

Gelding or Mare Four Years Old and Over—First, Robert Burgess & Son; second, Robt. Burgess & Son; third, L. Dunbar; fourth, J. W. Jarvis.

Gelding or Mare Three Years Old and Under Four—First, Finch Bros.; second, Chas. Irvine; third, Finch Bros.

Gelding or Mare Two Years Old and Under Three—First, J. W. Jarvis; second, W. W. Miller; third, Henry Lefebure.

Gelding or Mare One Year Old and Under Two—First, A. G. Soderberg; second, C. E. Jones.

Draft Team in Harness—First, Robert Burgess & Son; second, Finch Bros.

Best Groomed and Harnessed Farmer's Team, Team to Count 50 Per Cent, Grooming and Harnessing 50 Per Cent—First, Robert Burgess & Son; second, Crawford & Griffin.

MULES.

EXHIBITORS.

Loren Dunbar, Earlham, Iowa; A. L. Foster, Winterset, Iowa; Chas. C. Judy, Tallula, Illinois; H. L. Orcutt, Monroe, Iowa.

AWARDS.

JUDGE....................ROBERT OGILVIE, Chicago, Illinois.

Mule Four Years Old or Over—First, Chas. C. Judy; second, Chas. C. Judy.

Mule Three Years Old and Under Four—First, Chas. C. Judy; second, Chas. C. Judy.

Mule Two Years Old and Under Three—First, Chas. C. Judy; second, Chas. C. Judy.

Mule One Year Old and Under Two—First, Chas. C. Judy; second, Chas. C. Judy.

Mule Colt Under One Year—First, Loren Dunbar; second, Loren Dunbar.

Mine Mule 15 Hands or Over—First, Chas. C. Judy; second, Chas. C. Judy.

Mine Mule 15 Hands or Under—First, H. L. Orcutt; second, A. L. Foster.

Mule, Any Age—First, Chas. C. Judy.

Pair of Mules Over 2400 Pounds—First, Chas. C. Judy; second, H. L. Orcutt.

Pair of Mules Under 2400 Pounds—First, Chas. C. Judy; second, H. L. Orcutt.

Pair of Mules, Any Age or Weight—First, Chas. C. Judy; second, H. L. Orcutt.

Five Mules of Any Age—First, Chas. C. Judy; second H. L. Orcutt.

CATTLE DEPARTMENT.

SUPERINTENDENT.........S. B. PACKARD, Marshalltown, Iowa.

SHORT-HORNS.

EXHIBITORS.

A. Alexander, Morning Sun, Iowa; Thos. Andrews, Cambridge, Nebraska; J. B. Brown, Solon, Iowa; G. H. Burge, Mt. Vernon, Iowa; R. A. Carrier, Newton, Iowa; C. W. Daws, Harlan, Iowa; James Duffus, Malcolm, Iowa; F. A. Edwards, Webster City, Iowa; Elmendorf Farm, Lexington, Kentucky; Flynn Farm Co., Des Moines, Iowa; F. W. Harding, Waukesha, Wisconsin; Harmon & Mansfield, Rhodes, Iowa; Everett Hayes, Hiawatha, Kansas; J. T. Judge, Carroll, Iowa; C. F. Mitchell & Son, Farragut, Iowa; D. R. Hanna, Ravenna, Ohio; Edward Odendahl, Carroll, Iowa; H. D. Parsons, Newton, Iowa; H. H. Powell & Son, Linn Grove, Iowa; C. A. Saunders, Manilla, Iowa; E. R. Silliman, Colo, Iowa; Wm. Smiley, Malcolm, Iowa; O. O. Smith, Des Moines, Iowa; J. F. Stevenson, Hancock, Iowa; G. H. White, Emerson, Iowa; F. M. Zenor, Webster City, Iowa.

AWARDS.

JUDGE..................CAPT. T. E. ROBSON, London, Ontario.

Bull Three Years Old or Over—First, Whitehall Marshall 209776, Elmendorf Farm; second, Whitehall King 222724, F. W. Harding; third, Golddigger 261957, William Smiley; forth, Clear the Way 231482; J. T. Judge; fifth, Good Lad 215023, Flynn Farm Co.; sixth, Scottish Champion 224435, H. D. Parsons.

"Whitehall Marshall"
Grand Champion Short Horn Bull, Iowa State Fair and Exposition, 1908.

Bull Two Years Old and Under Three—First, Anoka Sultan 264212, D. R. Hanna; second, Snowflake 263207, Everett Hayes; third, City Marshall 270020, Flynn Farm Co.; fourth, The Dreamer 283208, G. H. White; fifth, Baron Pride 275479, Harmon & Mansfield; sixth, Acanthus King, 275727, C. F. Mitchell & Son.

Senior Yearling Bull—First, Pineherst Champion 285286, J. F. Stevenson; second, Rob Roy 293798, Harmon & Mansfield.

Junior Yearling Bull—First, King Cumberland 288383, H. H. Powell & Son; second, Royal Diadem 283492, Thomas Andrews; third, Count Abbot 300501, C. L. McClellan; fourth, Double Goods 297521, Flynn Farm Co.; fifth, Golden Chief 300203, A. Alexander; sixth, Marsahll Gloster, F. W. Harding.

Senior Bull Calf—First, Leader of Fashion, F. W. Harding; second, Baron Sultan, F. W. Harding; third, Lovat Champion F., Vol. 72, Flynn Farm Co.; fourth, King Champion 2nd 192600, C. A. Saunders; fifth, Ringmaster 299782, C. W. Daws & Son; sixth, Sultan's Crown, F. W. Harding.

Junior Bull Calf—First, Malaka's Goods, H. D. Parsons; second, New Year Gift, Vol. 73, G. H. Burge; third, King Maringo 2nd, C. A. Saunders; fourth, Marchal Neil, Elmendorf Farm.

Cow Three Years Old or Over—First, Flora 90th 70130, D. R. Hanna; second, Missie of Browndale 12, F. W. Harding; third, Lovely of Grassmere, Vol. 57, P. 991, Elmendorf Farm; fourth, Grace, Vol. 66, Everett Hayes; fifth, Choice Blythesome, H. D. Parsons; sixth, Rachael's Daughter, F. W. Harding.

Heifer Two Years Old and Under Three—First, Poplar Park Queen 12878, D. R. Hanna; second, Anoka Gloster 2d, F. W. Harding; third, Simissippi Rose, Vol. 69, Elmendorf Farm; fourth, Beauty Rose 30769, Flynn Farm Co.; fifth, Julia C., Vol. 68, G. H. White; sixth, Bauff's Lily, Vol. 68, Everett Hayes.

Senior Yearling Heifer—First, Sultan's Athene, F. W. Harding; second, Anoka Countess, F. W. Harding; third, Bernice, F. A. Edwards; fourth, Elmendorf Lassie 15353, Elmendorf Farm; fifth, Ethel 12882, Thomas Andrews; sixth, Roan Lillian 264112.

Junior Yearling Heifer—First, Beaufort Princess 3d 15254, D. R. Hanna; second, Lady Graceful 154118, Flynn Farm Co.; third, Gloster Sultana, F. W. Harding; fourth, Veronica 5th 15026, J. T. Judge; fifth, Isabelle Princess 12884, Thomas Andrews; sixth, Nuptial Flower 19850, Elmendorf Farm.

Senior Heifer Calf—First, Countess F.,Vol. 72, Flynn Farm Co.; second, Diamond Anoka, F. W. Harding; third, Butterfly Queen 35630, D. R. Hanna; fourth, Rose of Elmendorf, Elmendorf Farm; fifth, Flynn Farm Missie, Vol. 72, Flynn Farm Co.; sixth, Lady Maringo 4th, C. A. Saunders.

Junior Heifer Calf—First, Susan Cumberland, C. A. Saunders; second, Sultana F., Vol. 72, Flynn Farm Co.; third, Scottish Sempstress 4th, C. A. Saunders; fourth, Hampton's Lady 36599, G. H. White; fifth, Mildred's Heiress, Vol. 73, G. H. Burge; sixth, Cherry Blossom Anoka, F. W. Harding.

Exhibitor's Herd—First, D. R. Hanna; second, F. W. Harding; third, Elmendorf Farm; fourth, Flynn Farm Co.; fifth, G. H. White.

Breeder's Young Herd—First, F. W. Harding; second, Thomas Andrews; third, C. W. Daws & Son; fourth, G. H. Burge; fifth, H. D. Parsons.

Calf Herd—First, F. W. Harding; second, C. A. Saunders; third, C. W. Daws & Son; fourth, G. H. Burge; fifth, Everett Hayes.

Get of Sire—First, F. W. Harding; second, F. W. Harding; third, J. T. Judge; fourth, C. W. Daws & Son; fifth, G. H. Burge.

Produce of Cow—First, F. W. Harding; second, F. W. Harding; third, F A. Edwards; fourth, G. H. Burge; fifth, C. W. Daws & Son.

Champion Short Horn Cow,
Iowa State Fair and Exposition, 1908.

Senior Champion Bull—Whitehall Marshall 209776, Elmendorf Farm.
Junior Champion Bull—King Cumberland 288383, H. H. Powell & Son.
Senior Champion Cow—Flora 90th 70130, D. R. Hanna.
Junior Champion Heifer—Sultan's Athene, F. W. Harding.
Grand Champion Bull—Whitehall Marshall 209776, Elmendorf Farm.
Grand Champion Female—Flora 90th 70130, D. R. Hanna.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Golddigger 261957, William Smiley; second, Clear the Way 231482, J. T. Judge; third, Good Lad 215023, Flynn Farm Co.; fourth, Scottish Champion 224435, H. D. Parsons; fifth, Claverburn's Ideal 247812, E. R. Silliman.

Bull Two Years Old and Under Three—First, City Marshall 270020, Flynn Farm Co.; second, The Dreamer 283208, G. H. White; third, Baron Pride 275479, Harmon & Mansfield; fourth, Acanthus King 275727; C. F. Mitchell & Son; fifth, Hampton s Counsellor 264533, G. H. White.

Junior Yearling Bull—First, Count Abbot 300501, C. L. McClellan; second, Double Goods 297521, Flynn Farm Co.; third Golden Chief 300203, A. Alexander; fourth, Beaufort Prince 296939, O. O. Smith; fifth, Black Grove Viscount, F. M. Zenor.

Senior Bull Calf—First, Lovat Champion F., Vol. 72, Flynn Farm Co.; second, King Champion 2d 192600, C. A. Saunders; third, Ringmaster 299782, C. W. Daws & Son; fourth, Royal George, Vol. 73, G. H. Burge; fifth, Louisa's Victor, J. B. Brown.

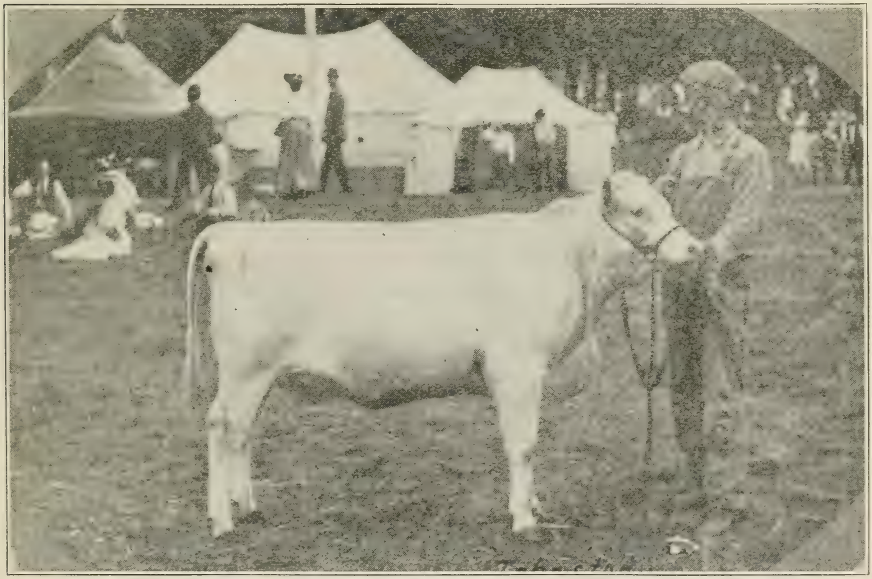
Junior Bull Calf—First, King Maringo 2nd, C. A. Saunders.

Cow Three Years Old or Over—First, Choice Blythesome, H. D. Parsnos; second, Sonerila 12th, Vol. 63, G. H. White; third, Fenimore Princess, F. A. Edwards; fourth, Flora Dell, Vol. 50, G. H. Burge.

Heifer Two Years Old and Under Three—First, Beauty Rose 30769, Flynn Farm Co.; second, Julia C., Vol. 68, G. H. White; third, Florella, Vol. 68, G. H. Burge; fourth, Dora 5th, H. D. Parsons.

Senior Yearling Heifer—First, Bernice, F. A. Edwards; second, Roan Lillian 264112, F. A. Andrews; third, Maple Hill Ruby 13943, G. H. White; fourth, Victoria 72nd, 15183, C. W. Daws & Son; fifth, Rosemond, Vol. 71, G. H. Burge.

Junior Yearling Heifer—First, Veronica 5th, 15026, J. T. Judge; second, Roan Countess 12713, G. H. White; third, Ceremonious Dove, G. H. White; fourth, Veronica Queen 36220, J. T. Judge; fifth, Waveland Rose 6th, J. B. Brown.



First Prize Senior Short Horn Heifer Calf,
Iowa State Fair and Exposition, 1908.

Senior Heifer Calf—First, Flynn Farm Missie, Vol. 72, Flynn Farm Co.; second, Lady Maringo 4th, C. A. Saunders; third, Mysie Girl 36218, J. T. Judge; fourth, Claverburn's Queen, E. R. Silliman; fifth, Blossom, Wm. Smiley.

Junior Heifer Calf—First, Scottish Sempstress 4th, C. A. Saunders; second, Hampton's Lady 36599, G. H. White; third, Mildred's Heiress, Vol. 73, G. H. Burge; fourth, Dora 7th, H. D. Parsons; fifth, Isabelle F., Vol. 72, Flynn Farm Co.

Exhibitor's Herd—First, Flynn Farm Co.; second, G. H. White; third, G. H. Burge.

Breeder's Young Herd—First, C. W. Daws & Son; second, G. H. Burge; third, H. D. Parsons.

Calf Herd—First, C. W. Daws & Son; second, G. H. Burge; third, H. D. Parsons.

Get of Sire—First, J. T. Judge; second, C. W. Daws & Son; third, G. H. Burge.

Produce of Cow—First, F. A. Edwards; second, G. H. Burge; third, C. W. Daws & Son.

Senior Champion Bull—Golddigger 261957, William Smiley.

Junior Champion Bull—Lovat Champion F., Vol. 72, Flynn Farm Co.

Senior Champion Cow—Choice Blythesome, H. D. Parsons.

Junior Champion Heifer—Berenice, F. A. Edwards.

Grand Champion Bull—Golddigger 261957, William Smiley.

Grand Champion Female—Berenice, F. A. Edwards.

HEREFORDS.

EXHIBITORS.

G. G. & W. S. Amos, Indianola, Iowa; Cargill & McMillan, La Crosse, Wisconsin; Carrothers Bros., Ryan, Iowa; G. G. Clement, Ord, Nebraska; Cook's Brookmont Farm, Odebolt, Iowa; Cyrus Tow, Norway, Iowa; Cornish & Patton, Osborn, Missouri; Dale & Wright, Pleasanton, Iowa; O. S. Gibbons & Son, Earlham, Iowa; Heath Stock Farm, Smithboro, Illinois; J. J. Early, Baring, Missouri; J. L. Lamont, Geneseo, Illinois; James E. Logan, Kansas City, Missouri; Mousel Bros., Cambridge, Nebraska; J. H. & J. L. Van Natta, LaFayette, Indiana; W. S. Van Natta & Son, Fowler, Indiana; G. W. Way & Son, New Sharon, Iowa.

AWARDS.

JUDGE....................H. W. MUMFORD, Urbana, Illinois.

Bull Three Years Old or Over—First, Prime Lad 9th 213963, W. S. Van Natta & Son; second, Bonnie Brae 3d 203317, Cargill & McMillan; third, Weston Anxiety 242862, Cornish & Patton; fourth, Sailor 93833, Cook's Brookmont Farm; fifth, Fast Freight 184272, G. G. Clement; sixth, Brock 173750, J. H. & J. L. Van Natta.

Bull Two Years Old and Under Three—First, Beau Carlos 248915, Cornish & Patten; second, Alto Hesoid 236293, Mousel Bros; third, Princeps A. 234591, Mousel Bros.; fourth, Sunny U. J. 239824, J. J. Early; fifth, Anxiety Stamp 3d 245125, G. W. Way & Son; sixth, Woodland Chief 223394, Cyrus A. Tow.

Senior Yearling Bull—First, Prime Lad 38th 261816, W. S. Van Natta & Son; second, Gomez Perfection 297758, Cornish & Patton; third, Heath's Money Maker, 263879, Heath Stock Farm.

Junior Yearling Bull—Castor 259475, James E. Logan; second, Princeps 15th 268046, Cargill & McMillan; third, General Wooly 297757, Cornish & Patton.

Senior Bull Calf—First, Prime Lad 42nd 289284, W. S. Van Natta & Son; second, Bonnie Brae 13th 288342, Cargill & McMillan; third, Repeater 287598, W. S. Van Natta & Son; fourth, Young Albany 290216, Cyrus A. Tow; fifth, Beau Weston 297754, Cornish & Patton; sixth, Princeps 30th, 288901, Mousel Bros.

Junior Bull Calf—First, Harold 295535, Mousel Bros.; second, Princepts 20th 288347, Cargill & McMillan; third, Pretty Lad 291343, J. H. and J. L. Van Natta.

Cow Three Years Old or Over—First, Magnonette 209514, Cargill & McMillan; second, Pretty Face 207319, W. S. Van Natta & Son; third, Princeps Lassie 18083, Mousel Bros.; fourth, Priscilla 204713, J. L. Lamont; fifth, Orange Belle 169011, J. H. & J. L. Van Natta; sixth, Orange Bud 3d 206958, Dale & Wight.

Heifer Two Years Old and Under Three—First, Miss Filler 2nd 230514, Cargill & McMillan; second, Margaret 234336, W. S. Van Natta & Son; third, Miss Filer 7th 239660, Cargill & McMillan; fourth, Mary Gertrude 219966, J. J. Early; fifth, Miss Princeps 8th 234588, Mousel Bros.; sixth, Clematis 2nd 234330, J. H. & J. L. Van Natta.

Senior Yearling Heifer—First, Princess 2nd, 264207, Cargill & McMillan; second, Cleo 261808, W. S. Van Natta & Son; third, Princess 3d 264208, Cargill & McMillan; fourth, Iba 261810, W. S. Van Natta & Son; fifth, Miss Roseberry 251471, Jas. E. Logan; sixth, Golden Treasurer 264668, G. G. Clement.

Junior Yearling Heifer—Princess 7th 267032, Cargill & McMillan; second, Missouri Queen 2nd 27598, Mousel Bros.; third, Heath's Gem 270008, Heath's Stock Farm; fourth, Sunny Maiden 268466, J. J. Early; fifth, Jessica 259478, James E. Logan; sixth, Lady Secret 3d 284711, J. H. & J. L. Van Natta.

Senior Heifer Calf—First, Miss Duchess 3d 289278, W. S. Van Natta & Son; second, Princess 9th 288919, Cargill & McMillan; third, Leona Lass 289277, W. S. Van Natta & Son; fourth, Dorothy Perkins 281467, James E. Logan; fifth, Myrtis 297761, Cornish & Patton; sixth, Miss Brae 10th 288918, Cargill & McMillan.

Junior Heifer Calf—First, Ardis 293931, James E. Logan; second, Water Pearl 296954, Heath Stock Farm; third, Miss Brae 13th 288344, Cargill & McMillan; fourth, Ovie 2nd 291342, J. H. & J. L. Van Natta; fifth, Ruby 2nd 297762, Cornish & Patton; sixth, Miss Gaiety, 296951, Heath Stock Farm.

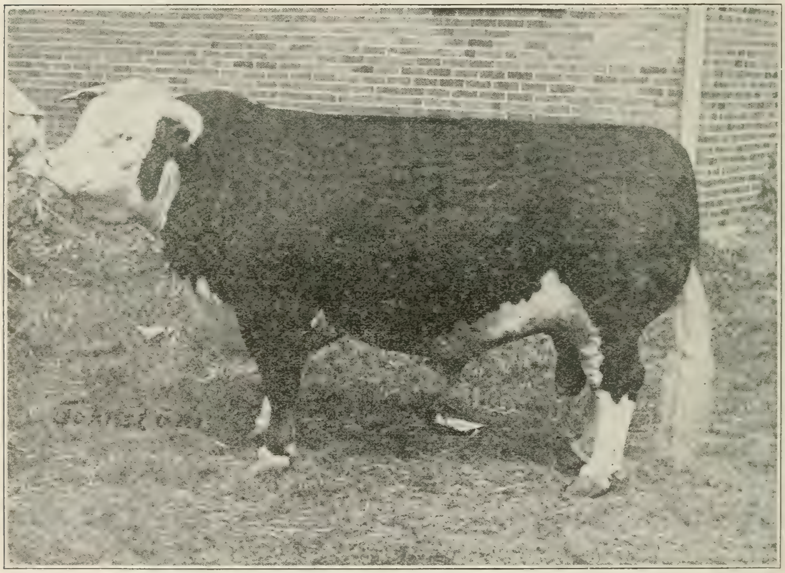
Exhibitor's Herd—First, W. S. Van Natta & Son; second, Cargill & McMillan; third, Mousel Bros.; fourth, G. W. Way & Son; fifth, J. H. and J. L. Van Natta.

Breeder's Young Herd—First, W. S. Van Natta & Son; second, Cargill & McMillan; third, James E. Logan; fourth, Heath Stock Farm; fifth, J. H. & J. L. Van Natta.

Calf Herd—First, W. S. Van Natta & Son; second, Cargill & McMillan; third, Heath Stock Farm; fourth, Cornish & Patton; fifth, J. L. Lamont.

Get of Sire—First, W. S. Van Natta & Son; second, Cargill & McMillan; third, James E Logan; fourth, Heath Stock Farm; fifth, Cornish & Patton.

Produce of Cow—First, Cargill & McMillan; second, W. S. Van Natta & Son; third, Cargill & McMillan; fourth, W. S. Van Natta & Son; fifth, Cornish & Patton.



"Prime Lad 9th"
Champion Herford Bull, Iowa State Fair and Exposition, 1908.

Champion Bull, Any Age—Prime Lad 9th 213963, W. S. Van Natta & Son.

Champion Cow, Any Age—Miss Filler 2nd 230514, Cargill & McMillan.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Sailor 93833, Cook's Brookmont Farm; second, Preceptor 232358, Dale & Wight; third, Field Marshall 208813, Carrothers Bros.

Bull Two Years Old and Under Three—First, Anxiety Stamp 3d 245125, G. W. Way & Son; second, Woodland Chief 223394, Cyrus A. Tow; third, Brookmont Actor 267636, Cook's Brookmont Farm.

Senior Yearling Bull—Emancipator 5th 281235, Carrothers Bros.; second, General G 261924, O. S. Gibbons & Son.

Junior Yearling Bull—First, Frank 269920, Dale & Wight; second, Victor 1st 265380, Cyrus A. Tow; third, Dandy 277595, G. G. & W. S. Amos.

Senior Bull Calf—First, Young Albany 290216, Cyrus A. Tow; second, Glencain 297839, Cook's Brookmont Farm; third, Emancipator 11th 297796, Carrothers Bros.; fourth, Emancipator 12th 297797, Carrothers Bros.; fifth, Emancipator 9th 297794, Carrothers Bros.

Junior Bull Calf—First, Menominee 297844, Cook's Brookmont Farm.

Cow Three Years Old or Over—First, Orange Bud 3d 206958, Dale & Wight; second, Kiowa 163892, G. W. Way & Son: third, Peach 3d 108852, Cook's Brookmont Farm; fourth, Rachel Randolph 100082, Cyrus A. Tow; fifth, Nellie 208512, Carrothers Bros.

Heifer Two Years Old and Under Three—First, Mabel 234074, G. W. Way & Son; second, Beau Anna 238380, G. W. Way & Son; third, Edward's Lassie 232978, Cyrus A. Tow; fourth, Princess 5th 269664, Dale & Wight.

Senior Yearling Heifer—First, Golden Leaf 4th 257494, G. W. Way & Son; second, Gwennie Sailor 297840, Cook's Brookmont Farm; third, Bright Eyes 266378, O. S. Gibbons & Son; fourth, Trilby 297846, Cook's Brookmont Farm.

Junior Yearling Heifer—First, Olive 269926, Dale & Wight; second, Fleming 297838, Cook's Brookmont Farm; third, Lettie 269924, Dale & Wight; fourth, Belle of Fairview 265379, Cyrus A. Tow.

Senior Heifer Calf—First, Pretty Face 284897, G. W. Way & Son; second, Viola 2nd 278239, O. S. Gibbons & Son; third, Beauty 281655, Dale & Wight; fourth, Alice 297837, Cook's Brookmont Farm; fifth, Leflora 297843, Cook's Brookmont Farm.

Junior Heifer Calf—First, Oral 295481, Dale & Wight; second, Gwennie Sailor 2nd 297841, Cook's Brookmont Farm; third, Nannie Sailor 297845, Cook's Brookmont Farm; fourth, Marjorie 293627, Cyrus A. Tow.

Exhibitor's Herd—First, G. W. Way & Son; second, Dale & Wight; third, Cook's Brookmont Farm.

Breeder's Young Herd—First, Dale & Wight; second, Cook's Brookmont Farm.

Get of Sire—First, G. W. Way & Son; second, Dale & Wight; third, Cook's Brookmont Farm.

Produce of Cow—First, Dale & Wight; second, Cook's Brookmont Farm; third, Carrothers Bros.

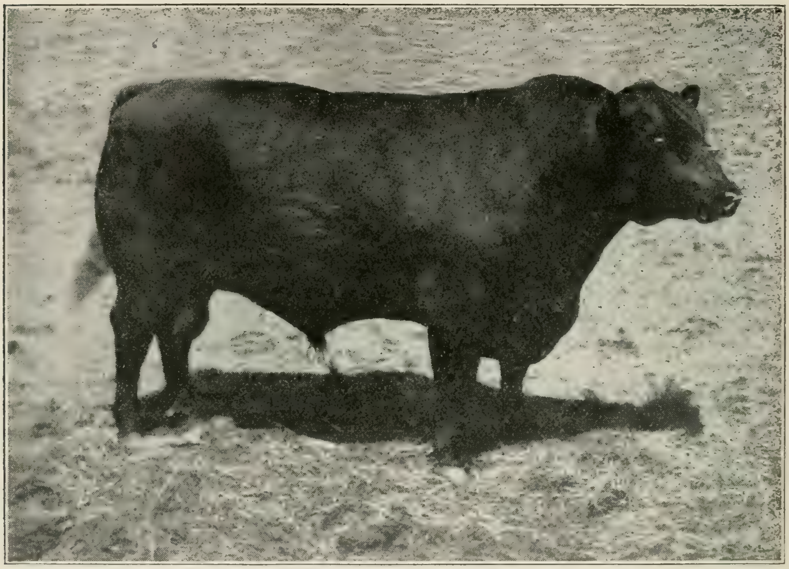
Champion Bull, Any Age—Anxiety Stamp 3d 245125, G. W. Way & Son.

Champion Cow, Any Age—Pretty Face 284897, G. W. Way & Son.

ABERDEEN-ANGUS.

EXHIBITORS.

J. Auracher, Shenandoah, Iowa; Otto V. Battles, Maquoketa, Iowa; A. C. Binnie, Alta, Iowa; J. O. Gring, Dallas Center, Iowa; H. J. Hess, Waterloo, Iowa; M. D. Karns, Hartwick, Iowa; W. J. Miller, Newton, Iowa; W. A. McHenry, Denison, Iowa; Chas. J. Off, Peoria, Illinois; Rosengift Stock Farm, Kelley, Iowa.



"Glenfoil Thickset 2nd"
Champion Aberdeen Angus Bull, Iowa State Fair and Exposition, 1908.

AWARDS.

JUDGE........................E. T. DAVIS, Iowa City, Iowa.

Bull Three Years Old or Over—First, Glenfoil Thickset 2nd 88142, Otto V. Battles; second, Vala's Rosegay 63745, Rosengift Stock Farm; third, Jim Delaney 62767, A. C. Binnie; fourth, King Donald 80599, W. J. Miller.

Bull Two Years Old and Under Three—Golden Gleam 93256, Otto V. Battles; second, Parole 2nd 98346, M. D. Karns; third, Prince Pico 93306, W. A. McHenry; fourth, Quinrod of The Oaks 93236, J. O. Gring.

Senior Yearling Bull—First, Oakville Quiet Lad 109220, Otto V. Battles; second, Brookside Erin 107615, Rosengift Stock Farm; third, Autocrat 104127, H. J. Hess; fourth, Ederic 104114, W. A. McHenry; fifth, King Blackbird, A. C. Binnie; sixth, Sir Novice 2nd 106540, W. J. Miller.

Junior Yearling Bull—First, Cotto Mere 109700, A. C. Binnie; second, Brookton Fame 115889, Otto V. Battles; third, Blackbird Brilliant 106060, Chas. J. Off.

Senior Bull Calf—First, Prince of Quality, Rosengift Stock Farm; second, Blackbird Brilliant 2nd, 114728, Chas. J. Off; third, Questman 2nd, A. C. Binnie; fourth, Pasadena 116617, W. A. McHenry; fifth, Ethan Eric 115868, Otto V. Battles; sixth, Gay Princeps, W. J. Miller.

Junior Bull Calf—First, Thickset Blackbird 115895, Otto V. Battles; second, Ebony's Quality 115356, H. J. Hess; third, Snowflake's King, W. J. Miller.

Cow Three Years Old or Over—First, Glenfoil Queen 2nd 88143, Otto V. Battles; second, Winnie of Meadow Brook 72461, Rosengift Stock Farm; third, Abbess McHenry 6th 82318, A. C. Binnie; fourth, Gussie of Kirkbridge 64008, W. J. Miller; fifth, Queen of Denison 39th 46126, W. A. McHenry; sixth, Walnut Dell Pearl 85319, M. D. Karns.

Heifer Two Years Old and Under Three—First, Queen Lass of Alta 3d 95007, A. C. Binnie; second, Queen Mother Johnson 2nd 95884, Rosengift Stock Farm; third, Pride McHenry 53d 93305, W. A. McHenry; fourth Gaylawn Bonnie Lass 100608, Otto V. Battles; fifth, Alicia of Quietdale 94108, W. J. Miller; sixth, Walnut Dell Coquette 92717, M. D. Karns.

Senior Yearling Heifer—First, Eza Lass 106501, A. C. Binnie; second, Brookside Quality Queen 2nd, 102355, Otto V. Battles; third, Walnut Dell Perl 3d 106459, W. D. Karns; fourth, Marguerite D. 2nd 96118, Rosengift Stock Farm; fifth, Sycamore Woodlawn Pride 97570, W. J. Miller; sixth, Walnut Dell Coquette 2nd 106458, W. D. Karns.

Junior Yearling Heifer—First, Blackbird of Quietdale 6th 105554, H. J. Hess; second, Esthonia of Alta 106505, A. C. Binnie; third, Erona of Alta 2nd, 107613, Otto V. Battles; fourth, Pride McHenry 62nd 104143, W. A. McHenry; fifth, Barbara McHenry 24th 104144, W. A. McHenry; sixth, Barbena 110403, Rosengift Stock Farm.

Senior Heifer Calf—First, Pride McHenry 72nd 116635, W. A. McHenry; second, Sunnyside Inez, 109651, Rosengift Stock Farm; third, Blackbird McHenry 76th 116631, W. A. McHenry; fourth, Thickset Rose 115890, Otto V. Battles; fifth, Banbee Lass, A. C. Binnie; sixth, Blackbird of Quietdale 9th 111156, H. J. Hess.

Junior Heifer Calf—First, Prima D. 115869, Rosengift Stock Farm; second, Thickset Lass 115896, Otto V. Battles; third, Blackbird of Quietdale 9th 115350, H. J. Hess; fourth, Blackbird Lassie 3d, A. C. Binnie; fifth, Pride of Alta 10th, A. C. Binnie; sixth, Elopis of Quietdale 115351, H. J. Hess.

Exhibitor's Herd—First, Otto V. Battles; second, A. C. Binnie; third, Rosengift Stock Farm; fourth, W. A. McHenry; fifth, W. J. Miller; sixth, M. D. Karns.

Breeder's Young Herd—First, A. C. Binnie; second, W. A. McHenry; third, H. J. Hess; fourth, Otto V. Battles; fifth, W. J. Miller.

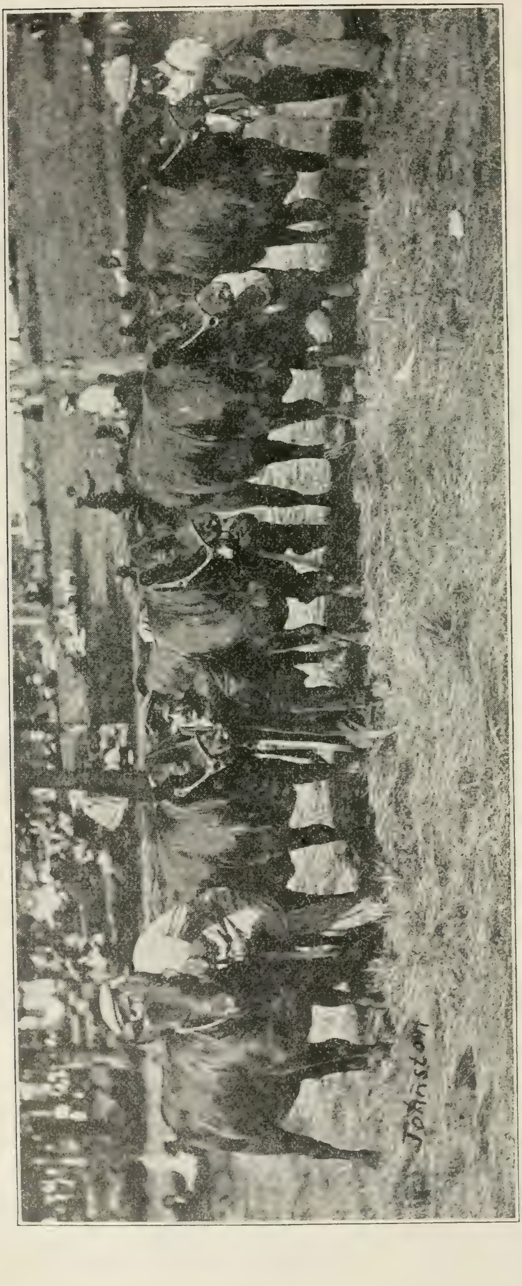
Calf Herd—First, H. J. Hess; second, Otto V. Battles; third, A. C. Binnie; fourth, Chas. J. Off.

Get of Sire—First, W. A. McHenry; second, Otto V. Battles; third, H. J. Hess; fourth, A. C. Binnie; fifth, W. J. Miller; sixth, Chas. J. Off.

Produce of Cow—First, Otto V. Battles; second, W. A. McHenry; third, H. J. Hess; fourth, W. J. Miller; fifth, M. D. Karns; sixth, M. D. Karns.

Champion Bull, Any Age—Glenfoil Thickset 2nd, 88142, Otto V. Battles.

Champion Cow, Any Age—Glenfoil Queen 2nd 88143, Otto V. Battles.



First Prize Aberdeen Angus Calf Herd, Iowa State Fair and Exposition, 1908.

GALLOWAY.

EXHIBITORS.

J. E. Bales & Son, Stockport, Iowa; C. S. Hechtner, Princeton, Illinois; C. P. Houstma, Orange City, Iowa; C. D. McPherson, Fairfield, Iowa; Straub Bros., Avoca, Neb.; C. F. Stone, Peabody, Kan.; Aug. Winter, Boyden, Iowa.

AWARDS.

JUDGE............................A. C. BINNIE, Alta, Iowa.

Bull Three Years Old or Over—First, Standard Favorite 25550, C. S. Hechtner; second, Wild's McDougal 24673, J. E. Bales & Son.

Bull Two Years Old and Under Three—First, Captain 4th of Tarbreoch (97011) 30933, Straub Bros.; second, Compoct 30576, Straub Bros.

Bull One Year Old and Under Two—First, Douglas of Meadow Lawn 30618, J. E. Bales & Son; second, ————, Straub Bros.; third, Noble Standard 30754, Straub Bros.

Senior Bull Calf—First, Billy Bryan 32252, C. S. Hechtner.

Junior Bull Calf—First, Scottish Pride, Straub Bros.; second, Billy Sunday, J. E. Bales & Son; third, Billy Taft 32251, C. S. Hechtner.

Cow Three Years Old or Over—First, Evaline 2nd of Avondale 20124, C. S. Hechtner; second Sadie of Meadow Lawn 26833, Straub Bros.; third, Hawkeye Lady 27121, J. E. Bales & Son; fourth, Dorthea 18673, J. E. Bales & Son; fifth, Valentine of Wavertree 17095, Straub Bros.

Heifer Two Years Old and Under Three—First, Lady Graceful 28781, J. E. Bales & Son; second, Vinola 3rd of Maples 28855, C. S. Hechtner; third, Lady Douglass 3rd, 28745, Straub Bros.; fourth, Molly Standard 30428, Straub Bros.

Senior Yearling Heifer—First, Meg Standard 30721, Straub Bros.; second, Vala 30802, J. E. Bales & Son; third, Lady of Maples 30639, C. S. Hechtner.

Junior Yearling Heifer—First, Lily May 30803, J. E. Bales & Son; second, Vinola 4th of Maples 30640, C. S. Hechtner; third, Princess Standard 30723, Straub Bros.

Senior Heifer Calf—First, Annie Davids 7th, J. E. Bales & Son; second, Dorothea 2nd, J. E. Bales & Son; third, Merry Maid, Straub Bros; fourth, Ada of Maples 32248, C. S. Hechtner.

Junior Heifer Calf—First, Sweet Maid, Straub Bros.; second, Bessie of Maples 32250, C. S. Hechtner.

Exhibitor's Herd—First, C. S. Hechtner; second, J. E. Bales & Son; third, Straub Bros.; fourth, Straub Bros.

Breeder's Young Herd—First, J. E. Bales & Son; second, Straub Bros.; third, C. S. Hechtner.

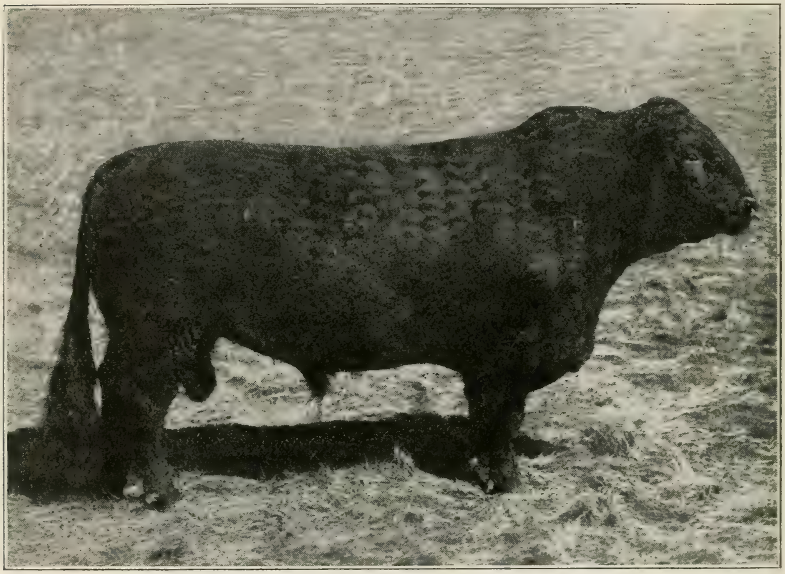
Calf Herd—First, C. S. Hechtner

Get of Sire—First, J. E. Bales & Son; second, Straub Bros.; third, Straub Bros.; fourth, C. S. Hechtner.

Produce of Cow—First, Straub Bros.; second, J. E .Bales & Son; third, Straub Bros.; fourth, J. E. Bales & Son; fifth, C. S. Hechtner.

Champion Bull, Any Age—Standard Favorite 25550, C. S. Hechtner.

Champion Cow, Any Age—Evaline 2nd of Avondale 20124, C. S. Hechtner.



"Standard Favorite"
Champion Galloway Bull, Iowa State Fair and Exposition, 1908.

POLLED DURHAM.

EXHIBITORS.

E. J. Augsperger, Pulaski, Iowa; Oscar Hadley, Plainsfield, Ind.; L. S. Huntley & Sons, Chariton, Iowa; Shaver & Duker, Kalona, Iowa; Wm. Smiley, Albany, Wis.

AWARDS.

JUDGE....................R. J. KINZER, Manhattan, Kansas.

Bull Three Years Old or Over—First, Roan Hero 3613, Shaver & Deuker; second, Champion of Iowa 4739, L. S. Huntley & Son; third, Victoria's Lad 5785, Wm. Smiley.

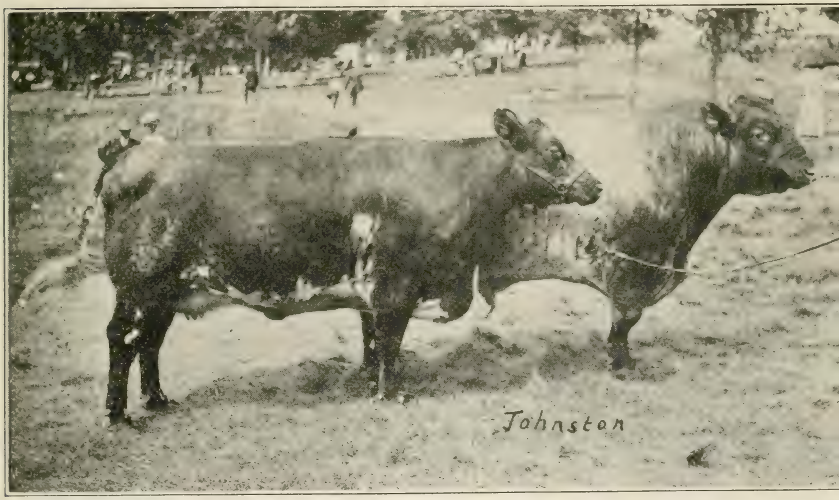
Bull Two Years Old and Under Three—First, Amity Bruce 5879, L. S. Huntley & Son; second, Arcade Duke 3rd 5026, Vol. 4, Shaver & Deuker;

third, Buttonwood Marshall 19th 5014, Oscar Hadley; fourth, Lucille's Tip 5947, Wm. Smiley.

Bull One Year Old and Under Two—First, Cupbearer Prize, Vol. 5, Shaver & Deuker; second, Walnut Grove Tip 6433, Wm. Smiley; third, Don Carlor, L. S. Huntley & Son; fourth, Gold Coin, E. J. Augsperger.

Bull Calf Under One Year—First Buttonwood Tip 5th 6672, Oscar Hadley; second, Butterfly Boy, Vol. 5, Shaver & Deuker; third, Amity Marshall, L. S. Huntley & Son; fourth, A Secret, L. S. Huntley & Son; fifth, Lida's Monarch, Wm. Smiley; sixth, Hero's Marshall, Vol. 5, Shaver & Deuker.

Cow Three Years Old or Over—First, Royal Flora, Vol. 3, Shaver & Deuker; second, Scottish Bell 4th, Vol. 4, Shaver & Deuker; third, Streatheam Queen 62nd, Vol. 4, Shaver & Deuker; fourth, Guyola, Vol. 4, L. S. Huntley & Son; fifth, Queen Mary, Vol. 3, E. J. Augsperger; sixth, Brunette Birdie, Vol. 4, L. S. Huntley & Son.



Champion Polled Durham Cow and Bull,
Iowa State Fair and Exposition, 1908.

Heifer Two Years Old and Under Three—Buttonwood Duchess, Vol. 4, Oscar Hadley; second, Royal Queen, Vol. 4, Shaver & Deuker; third, Princess Second, Vol. 4, Shaver & Deuker; fourth, Moss Rose 69th, Vol. 4, L. S. Huntley & Son; fifth, White Stockings 3rd, Vol. 4, Wm. Smiley; sixth, Golden Rose 6th, Vol. 4, E. J. Augsperger.

Heifer One Year Old and Under Two—First, Buttonwood Maud, Vol. 4, Oscar Hadley; second, Buttonwood Jenny Lind 4th, Vol. 4, Oscar Hadley; third, Scottish Bell 5th, Vol. 4, Shaver & Deuker; fourth, Victoria 90th, Vol. 4, L. S. Huntley & Son; fifth, Scottish Bell 6th, Vol. 4, Shaver & Deuker; sixth, Hero Maid, Vol. 5, Shaver & Deuker.

Heifer Calf Under One Year—First, Buttonwood Gladi 3rd, Vol. 5, Oscar Hadley; second, Buttonwood Jenny Lind 5th, Vol. 5, Oscar Hadley; third, Orange Blossom, Vol. 5, Shaver & Deuker; fourth, Buttonwood Ophelia, Vol. 5, Oscar Hadley; fifth, Brunette Carrie, L. S. Huntley & Son; sixth, Lova 2nd, Vol. 5, Shaver & Deuker.

Exhibitor's Herd—First, Shaver & Deuker; second, Oscar Hadley; third, Shaver & Deuker; fourth, L. S. Huntley & Son; fifth, Wm. Smiley.

Breeder's Young Herd—First, Oscar Hadley; second, Shaver & Deuker.

Get of Sire—First, Oscar Hadley; second, Oscar Hadley; third, L. S. Huntley & Son; fourth, Shaver & Deuker; fifth, E. J. Augsperger.

Produce of Cow—First, Shaver & Deuker; second, Oscar Hadley; third, L. S. Huntley & Son; fourth, Wm. Smiley.

Champion Bull, Any Age—Roan Hero 3613, Shaver & Deuker.

Champion Cow, Any Age—Royal Flora, Vol. 3, Shaver & Deuker.

RED POLLED.

EXHIBITORS.

Adolph P. Arp, Eldridge, Iowa; Dan Clark, Cedar Falls, Iowa; Frank J. Clouse, Clare, Iowa; Frank Davis & Sons, Holbrook, Neb.; Chas. Graff, Bancroft, Neb.; W. S. Hill, Alexandria, S. Dak.

JUDGE........................J. W. MARTIN, Gotham, Wisconsin.

AWARDS.

Bull Three Years Old or Over—First, Cremo 13018, Frank Davis & Sons; second, Logan 13500, Frank J. Clouse; third, Durock 14573, Dan Clark; fourth, Blooming's Perfection 10067, Adolph P. Arp; fifth, Nelson 14070, W. S. Hill.

Bull Two Years Old and Under Three—First, I Too 16313, Chas. Graff; second, Major Bragg 16502, W. S. Hill; third, Rowdy Staff 16503, Adolph P. Arp; forth, Morning Star 16313, Chas. Graff.

Bull One Year Old and Under Two—First, Rutland 16053, W. S. Hill; second, Midnight 17947, Dan Clark; third, Leon 17467, Chas. Graff; fourth, Nailer Boy 17205, Adolph P. Arp; fifth, Dafter 15871, Adolph P. Arp.

Bull Calf Under One Year—First, Don 17164, W. S. Hill; second, Favorite 17846, Frank Davis & Sons; third, Evans 17421, Frank J. Clouse; fourth, Belmont 17167, W. S. Hill; fifth, Napoleon 17849, Frank Davis & Sons; sixth, LeRoy 17847, Frank Davis & Sons.

Cow Three Years Old or Over—First, Inez 23477, W. S. Hill; second, Lala 18480, Adolph P. Arp; third, Ruperta 18993, Chas. Graff; fourth, Ruby Rose 22524, Adolph P. Arp; fifth, Ruberta 22307, Chas. Graff; sixth, DewDrop 21054, Frank Davis & Sons.

Heifer Two Years Old and Under Three—First, Lady 26499, Adolph P. Arp; second, Mandeline 24971, Frank J. Clouse; third, Inas 25786, Chas. Graff; fourth, Buttercup 24686, W. S. Hill; fifth, Miss Perfection 26871, Dan Clark; sixth, Quarts 29133, Frank J. Clouse.

Heifer One Year Old and Under Two—First, Lena 26752, W. S. Hill; second, Lena 28536, Chas. Graff; third, Cedar Girl 26891, Dan Clark; fourth, Dorothy 26751, W. S. Hill; fifth, Miss Saucy 26676, Frank J. Clouse; sixth, Lulu 27784, Adolph P. Arp.

Heifer Calf Under One Year—First, Marian 28109, W. S. Hill; second, Excellence, Chas. Graff; third, Narcissa 4th, 28655, Frank J. Clouse; fourth, Quartz 29134, Frank J. Clouse; fifth, Ione 28115, W. S. Hill; sixth, Luna Davy 29110, Adolph P. Arp.

Exhibitor's Herd—First, W. S. Hill; second, Chas. Graff; third, Frank J. Clouse; fourth, Adolph P. Arp; fifth, Dan Clark.

Breeder's Young Herd—First, W. S. Hill; second, Chas. Graff; third, Frank Davis & Sons; fourth, Adolph P. Arp.

Get of Sire—First, Chas. Graff; second, W. S. Hill; third, Frank Davis & Sons; fourth, Adolph P. Arp.

Produce of Cow—First, Adolph P. Arp; second, Chas. Graff; third, Dan Clark; fourth, W. S. Hill; fifth, Frank J. Clouse.

Champion Bull, Any Age—Cremo 13018, Frank Davis & Sons.

Champion Cow, Any Age—Inez 23477, W. S. Hill.

HOLSTEIN.

EXHIBITORS.

John B. Irwin, Minneapolis, Minn.; C. F. Stone, Peabody, Kan.; August Winter, Boyden, Iowa.

AWARDS.

JUDGE....................HUGH G. VAN PELT, Ames, Iowa.

Bull Three Years Old or Over—First, Kaan Jewell of Woodlake 28725, John B. Irwin; second, Ethel Alexander 2nd, Sir Netherland 26423, C. F. Stone; third, Empress Laddie 2nd 38529, August Winter.

Bull Two Years Old and Under Three—First, Tula Ce Kol Pietertje 41458, John B. Irwin; second, Karel Netherland De Kol 41760, C. F. Stone.

Bull One Year Old and Under Two—First, Sir Pontiac Marie Hengerveld 50609, C. F. Stone; second, Sir Mercedes Pauline 47148, John B. Irwin; third, Laddie of the West 52853, August Winter.

Bull Calf Under One Year—First, Sir Korndyke Heng. Mechthilde, John B. Irwin; second, Sir Korndyke Heng. Ormsby 3rd, John B. Irwin; third, Prince of Rosedale, C. F. Stone; fourth, Sir Josephine Abberkirk, C. F. Stone; fifth, Sir Pietertze Prince Cornucopia, John B. Irwin.

Cow Three Years Old or Over—First, Maryke 3rd, Gerben 4th 54935, C. F. Stone; second, Chloe Mechthilde 2nd 56754, John B. Irwin; third, Hulda Twish 2nd 60397, C. F. Stone; fourth, Lady Parthena Swart 58518, C. F. Stone; fifth, Betty Henry 51294, August Winter.

Heifer Two Years Old and Under Three—First, Josephine 2nd, Gerben De Kol 78622, C. F. Stone; second, Sissy Baker Alexander 76364, C. F. Stone; third, Mazee Johanne De Pauline 91568, John B. Irwin; fourth, Canary Mechtilde 96685, John B. Irwin; fifth, Lillie Empress 95498, August Winter.

Heifer One Year Old and Under Two (In Milk)—First, Lucy Colantha Empress 95497, August Winter; second, Bertha Empress 95999, August Winter.

Heifer One Year Old and Under Two (Dry)—First, Lady Truth Gerben Alexander 95630, C. F. Stone; second, Josephine Gerben Netherland 88432, C. F. Stone; third, Ormsby De Kol Queen, John B. Irwin.

Heifer Calf Under One Year—First, Miss Korndyke Hengerveld Ormsby 4th, John B. Irwin; second, Miss Korndyke Hengerveld Johanna 2nd, John B. Irwin; third, Miss Korndyke Hengerveld Johanna 3rd, John B. Irwin; fourth, Lady Truth Alexander, C. F. Stone; fifth, Ethel's Pride, C. F. Stone.

Exhibitor's Herd—First, C. F. Stone; second, John B. Irwin; third, C. F. Stone; fourth, August Winter.

Breeder's Young Herd—First, C. F. Stone; second, August Winter.

Get of Sire—First, C. F. Stone; second, John B. Irwin; third, August Winter.

Produce of Cow—First, C. F. Stone; second, John B. Irwin; third, John B. Irwin; fourth, August Winter.

Champion Bull, Any Age—Kaan Jewell of Woodlake 28725, John B. Irwin.

Champion Cow, Any Age—Maryke 3rd, Gerben 4th, 54935, C. F. Stone.

JERSEY.

EXHIBITORS.

Dixon & Deaner, Brandon, Wis.; Honeywell & Reedy, Lincoln, Neb.; Geo. S. Redhead, Des Moines, Iowa; A. U. Quint, Des Moines, Iowa.

AWARDS.

JUDGE..................PROF. H. G. VAN PELT, Ames, Iowa.

Bull Three Years Old or Over—Zelaya's Fancy Lad 65883, Dixon & Deaner; second, Prince Fontaine 71829, Honeywell & Reedy; third, Quint's Quest 73431, A. U. Quint.

Bull Two Years Old and Under Three—First, Guenion's Champion Lad 73959, Dixon & Deaner; second, Golden Fern's Grandson (73385), Honeywell & Reedy; third, Nebraska Forfershire 73811, Honeywell & Reedy.

Bull One Year Old and Under Two—First, Stockwell's Giltedge 79145, Dixon & Deaner; second, Silverine Lovely Lad, Dixon & Deaner; third, Guenon's King, Geo. Redhead.

Bull Calf Under One Year—First, Combination's Golden Prince 79767, Dixon & Deaner; second, Johanna's Golden Lad 80893, Dixon & Deaner; third, Bob La Follette, Dixon & Deaner; fourth, ————, Honeywell & Reedy; fifth, ————, Honeywell & Reedy.

Cow Three Years Old or Over—First, Morey's Golden Lass 168471, Dixon & Deaner; second, Silver Carrie 182974, Dixon & Deaner; third, Brown Fountain of Trinity 172296, Honeywell & Reedy; fourth, Madam Rioter King 163156, Geo. S. Redhead.

Heifer Two Years Old and Under Three—First, Liddie's Pet 208387, Dixon & Deaner; second, Cambraie's Golden Pet 214992, Dixon & Deaner; third, Princigem 199541, Honeywell & Reedy; fourth, Mariona 199540, Honeywell & Reedy; fifth, Marigold Kate 2nd 212439, Honeywell & Reedy.

Heifer One Year Old and Under Two (In Milk)—First, Merry's Golden Lady, Dixon & Deaner; second, Liberal Lady 213518, Dixon & Deaner; third, Brandon Pet 217443, Dixon & Deaner; fourth, Decanter's Spot 212442, Honeywell & Reedy; fifth, Ida Golden 208583, Honeywell & Reedy.

Heifer One Year Old and Under Two (Dry)—First, Jolly Sweet Thing 2nd 213532, Dixon & Deaner; second, Maceo's Signal V 2nd, Geo. S. Redhead; third, Velda 3rd, Geo. S. Redhead.

Heifer Calf Under One Year—First, Bessie's Golden Lady 217444, Dixon & Deaner; second, Derry's Rosa 216577, Dixon & Deaner; third, ————, Honeywell & Reedy; fourth, Oxford's Eminent 216578, Dixon & Deaner; fifth, Cupid's Alice, Dixon & Deaner.

Exhibitor's Herd—First, Dixon & Deaner; second, Dixon & Deaner; third, Honeywell & Reedy.

Breeder's Young Herd—First, Dixon & Deaner; second, Honeywell & Reedy; third, Honeywell & Reedy.

Get of Sire—First, Dixon & Deaner; second, Honeywell & Reedy; third, Geo. S. Redhead.

Produce of Cow—First, Dixon & Deaner; second, Honeywell & Reedy; third, Geo. S. Redhead.

Champion Bull, Any Age—Stockwell's Giltedge 79145, Dixon & Deaner.

Champion Cow, Any Age—Jolly Sweet Thing 2nd, 213532, Dixon & Deaner.

TEST OF MILCH COWS.

EXHIBITORS.

John B. Irwin, Minneapolis, Minn.; Dixon & Deaner, Brandon, Wis.; August Winter, Boyden, Iowa; Adolph P. Arp, Eldridge; C. F. Stone, Peabody, Kan.

AWARDS.

JUDGE........................H. G. VAN PELT, Ames, Iowa.

Test of Milch Cows—First, Chloe Mechthilde, John B. Irwin; second, Morey's Lass, Dixon & Deaner; third, Louise Elgin, August Winter; fourth, Tinnie De Kol, August Winter; fifth, Ruby Rose, Adolph P. Arp; sixth, Mulberry Beechwood, C. F. Stone.

FAT CATTLE—SHORTHORNS.

EXHIBITORS.

J. B. Brown, Solon, Iowa; C. W. Daws, Harlan, Iowa; Elmendorf Farm, Lexington Ky.; Flynn Farm Co., Des Moines, Iowa; Wm. Smiley, Malcom, Iowa; C. A. Saunders, Manilla, Iowa.

AWARDS.

JUDGE......................T. E. ROBSON, London, Ontario.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Look Me Over, C. A. Saunder; second; Kenneth, Wm. Smiley; third, Martin, Elmendorf Farm.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Look at Me, C. A. Saunders; second, Baron Lovely, J. B. Brown; third, Sol, Elmendorf Farm.

Steer, Spayed or Martin Heifer, Under One Year—First, Prince, C. W. Daws & Son; second, Boxer, Elmendorf Farm; third, Jim, C. A. Saunders.

Champion Steer, Spayed or Martin Heifer—Look Me Over, C. A. Saunders.

Champion Group—First, C. A. Saunders; second, Elmendorf Farm; third, Wm. Smliey.

FAT CATTLE—HEREFORDS.

EXHIBITORS.

Cargill & McMillan, LaCrosse, Wis.; J. H. & J. L. Van Natta, La Fayette, Ind.

AWARDS.

JUDGE..............HERBERT W. MUMFORD, Urbana, Illinois.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Durbur 255027, Cargill & McMillan; second, Orvie's Diamond, J. H. & J. L. Van Natta.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Brock's Lad, J. H. & J. L. Van Natta; second, Princepts 18th 288345, Cargill & McMillan.

Steer, Spayed or Martin Heifer Under One Year—First, Brock's Boy, J. H. & J. L. Van Natta; second, Bonnie Brae 14th 288352, Cargill & McMillan.

Champion Steer, Spayed or Martin Heifer—Duber, Cargill & Mc-Millan.

Champion Group—First, J. H. & J. L. Van Natta; second, Cargill & McMillan.

FAT CATTLE—ABERDEEN ANGUS.

EXHIBITORS.

W. J. Miller, Newton, Iowa; second, Chas. J. Off, Peoria, Ill.

AWARDS.

JUDGE........................E. T. DAVIS, Iowa City, Iowa.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Edison 1446, Chas. J. Off; second, Proud Lad 1450, W. J. Miller; third, Syberian 4th, 1435, W. J. Miller.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Peoria 1493, Chas. J. Off; second, Pride of Peoria 12th 100592, Chas. J. Off; third, Metz Prince 3rd 1516, W. J. Miller.

Steer, Spayed or Martin Heifer, One Year Old and Under Two—First, Peoria 1493, Chas. J. Off; second, Pride of Peoria 12th 100592, Chas. J. Off; third, Metz Prince 3rd 1516, W. J. Miller.

Steer, Spayed or Martin Heifer, Under One Year—First, Peoria 14th 1583, Chas. J. Off; second, Model Lad, W. J. Miller.

Champion Steer, Spayed or Martin Heifer—Edison 1446, Chas. J. Off.

Champion Group of Three Owned by One Exhibitor—First, Chas. J. Off; second, W. J. Miller.

FAT CATTLE—GALLOWAYS.

EXHIBITORS.

C. S. Hechtner, Princeton, Ill.; C. D. McPherson, Fairfield, Iowa.

AWARDS.

JUDGE............................A. C. BINNIE, Alta, Iowa.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Governor, C. S. Hechtner; second, Orange, C. D. McPherson; third, Hechtner's 3rd, C. D. McPherson.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, None; second, None; third, Sunshine, C. D. McPherson.

Champion Steer, Spayed or Martin Heifer—Governor, C. S. Hechtner.

Champion Group of Three Owned by One Exhibitor—First, C. D. McPherson.

FAT CATTLE—RED POLLED.

EXHIBITORS.

Adolph P. Arp, Eldridge, Iowa; Frank Davis & Son, Holbrook, Nebraska; W. S. Hill, Alexander, S. Dak.

AWARDS.

JUDGE..................J. W. MARTIN, Gotham, Wisconsin.

Steer One Year Old and Under Two—First, Perfection 16880, Adolph P. Arp; second, Twin White Sox, Frank Davis & Son; third, Nailer 16882, Adolph P. Arp; fourth, ————, W. S. Hill.

Steer Calf One Year Old—First, Sam 17939, Adolph P. Arp; second, Jim 17940, Adolph P. Arp.

FAT CATTLE—GRADES AND CROSS BREEDS.

EXHIBITORS.

Thomas Andrews, Cambridge, Neb.; G. G. Clement, Ord, Neb.; Dale & Wight, Pleasanton, Iowa; C. W. Daws, Harlan, Iowa; Chas. J. Off, Peoria, Ill.; C. A. Saunders, Manilla, Iowa.

AWARDS.

JUDGE......................T. E. ROBSON, London, Ontario.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Ike, C. A. Saunders; second, Metz Ben, W. J. Miller; third, Jumbo, Dale & Wight.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Metz Jerry, W. J. Miller; second, Roan Jack, C. A. Saunders.

Steer, Spayed or Martin Heifer, Under One Year—First, Pinehurst Lad, C. W. Daws & Son; second, Chunk, G. G. Clement; third, White Rose, Thomas Andrews.

Champion Steer, Spayed or Martin Heifer—Ike, C. A. Saunders.

Champion Group of Three Owned by One Exhibitor—First, W. J. Miller; second, C. A. Saunders.

FAT CATTLE—GRAND CHAMPION.

EXHIBITORS.

Chas. J. Off, Peoria, Ill.; Cargill & McMillan, LaCrosse, Wis.; C. A. Saunders, Manilla, Iowa.

AWARDS.

JUDGES .... { T. E. ROBSON.
E. DAVIS.
HERBERT W. MUMFORD.

Grand Champion Steer, Spayed or Martin Heifer, Any Age or Breed, Limited to the Sweepstakes or Champion Steers, Spayed or Martin Heifers Winning in the Pure Bred Short-horn, Hereford, Aberdeen-Angus, Galloway and the Grade and Cross-Bred Sections—Edison 1446, Chas. J. Off.

FAT CATTLE—GRAND CHAMPION GROUP.

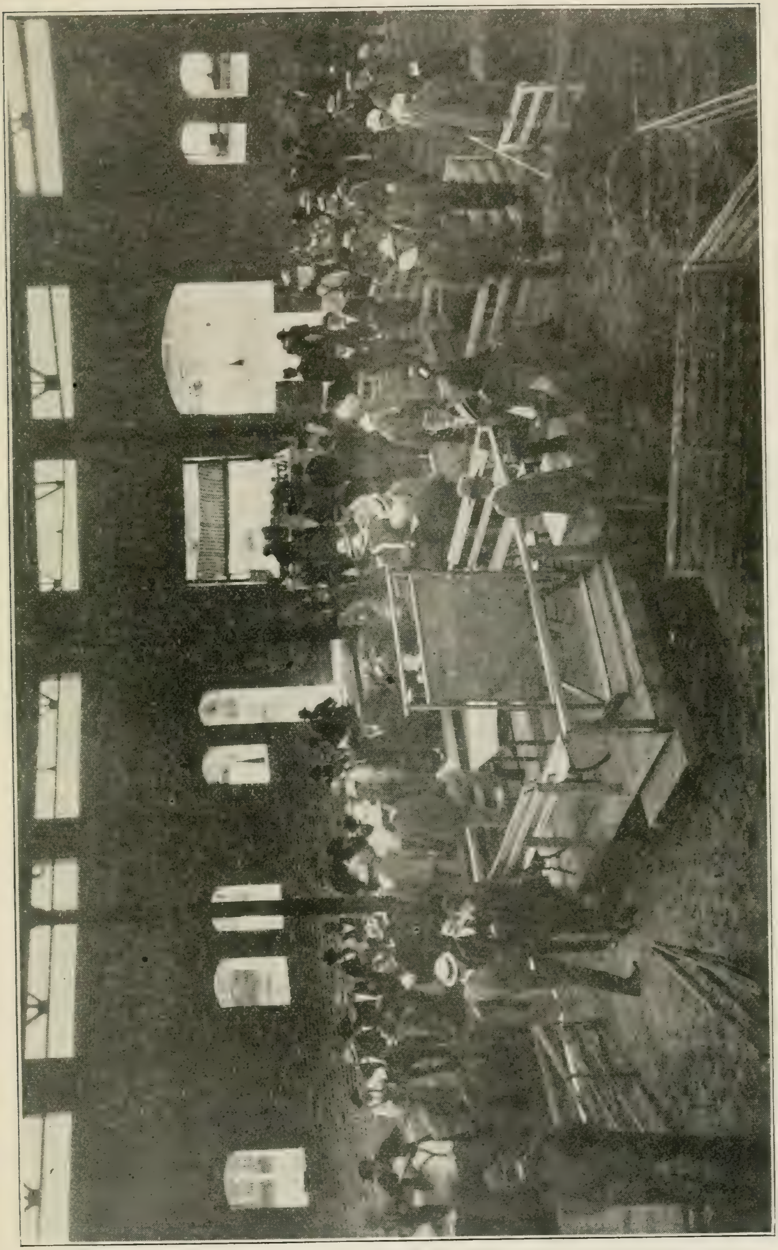
EXHIBITORS.

Chas. J. Off, Peoria, Ill.; C. A. Saunders, Manilla, Iowa; W. J. Miller, Newton, Iowa; J. H. & J. L. Van Natta, LaFayette, Ind.

AWARDS.

JUDGES .... { T. E. ROBSON.
E. DAVIS.
HERBERT W. MUMFORD.

Grand Champion Group of Three Steers, Spayed or Martin Heifers—To Cosist of One Steer, Spayed or Martin Heifer Two Years and Under Three, One One Year and Under Two, and One Under One Year, Owned by One Exhibitor. Competition Limited to the Champion Groups in Short-horn, Hereford, Aberdeen-Angus, Galloway and Grades and Cross-Bred Sections—Chas. J. Off.



Scene in the Swine Judging Pavilion, Iowa State Fair and Exposition, 1908.

SWINE DEPARTMENT.

SUPERINTENDENT........R. S. JOHNSTON, Columbus Junction.

POLAND CHINA.

EXHIBITORS.

F. L. Bunton, West Union, Iowa; M. W. Bateman, Monroe, Iowa; J. F. Bonner, Panora, Iowa; A. J. Banks, Montour, Iowa; Banks & Banks, Knoxville, Iowa; H. C. Boyer, Lovilia, Iowa; R. R. Ballantine, Jewell, Iowa; Edward Burroughs, Panola, Ill.; S. P. Chiles, Fairfield, Iowa; A. W. DeWitt, Russel, Iowa; J. I. Davis, Mt. Hamill, Iowa; A. A. Dodge, Remington, Ind.; D. B. Davenport, Carlisle, Iowa; John Duff, Winterset, Iowa; R. H. Fichtenmueller, Farmington, Iowa; J. H. Fawcett, Woolstock, Iowa; G. Friday & Son, Sigourney, Iowa; J. M. Frey & Sons, Wadena, Iowa; S. Fleming, Stuart, Iowa; John Francis & Sons, New Lenox, Ill.; J. E. Francis, New Lenox, Ill.; J. S. Fawcett & Son, Springdale, Iowa; J. A. Goltry, Russel, Iowa; B. L. Gossick, Fairfield, Iowa; J. W. Garvey, Auburn, Ill.; J. E. Graham, Menlo, Iowa; A. Glenn, Glenn Ellyn, Ill.; L. Hunsberger, Elgin, Iowa; W. H. Harrison, Wright, Iowa; W. J. Hansen, Holbrook, Iowa; Holland & Hansen, New London, Iowa; Hemmerling & Palmer, Dike, Iowa; A. P. Hoisington, Fontanelle, Iowa, C. W. Humerick, Atlantic, Iowa; J. R. Hoover & Son, Oskaloosa; Chas. Krumm, Postville, Iowa; C. F. Keeling, Avon, Iowa; Koebel Bros., Wayland, Iowa; Wm. Lentz, Ankeny, Iowa; A. J. Lytle & Son, Oskaloosa, Iowa; J. G. Lytle & Son, Oskaloosa, Iowa; J. V. Lingenfelter, Altoona, Iowa; J. W. Locke, Remington, Ind., W. O. Merideth, Fairfield, Iowa; N. F. Miller, Knoxville, Iowa; E. M. Metzger, Fairfield, Iowa; J. A. Mason, Carlisle, Iowa; Morris Bros. & Nicholson, Lohrville, Iowa; James O'Donnell, Ames, Iowa; F. N. Orr & Sons, Albia, Iowa; G. A. Perry, Knoxville, Iowa; Wm. Pedrick & Son, Ottumwa, Iowa; C. L. Prouty, Council Bluffs, Iowa; J. W. Parker, Columbia, Iowa; Andrew Rossow, Lohrville, Iowa; Harry Stevenson, Knoxville, Iowa; Mark I. Shaw, Monroe, Iowa; F. P. Sanders, Sigourney, Iowa; Strater Bros., Monroe, Iowa; W. G. Stevenson, Knoxville, Iowa; W. Z. Swallow, Waukee, Iowa; O. Swallow, Waukee, Iowa; Al. Schwaller, Burlington, Iowa; Schrader & Sexsmith, Greenfield, Iowa; John Sippel, Casey, Iowa; E. G. Tweed, Le Grand, Iowa; R. G. Tweed, Le Grand, Iowa; Dr. R. W. Thomas, St. Joseph, Mo., J. M. Wright, Russell, Iowa; F. D. Winn, Randolph, Mo.; Frank Wolgamuth, Elgin, Ill.; R. E. West, Altoona, Iowa; J. H. Watson, Madrid, Iowa; Chas. D. Wellington LaFayette, Ind.; O. W. Whiteman, Biggsville, Ill.

AWARDS.

JUDGE..........................L. H. ROBERTS, Paton,Iowa.

Boar Two Years Old or Over—First, Improvement, Frank Wolgamuth; second, Nobleman, F. D. Winn; third, Charmer, F. N. Orr & Sons; fourth, Iowa Perfection, S. Fleming; fifth, Ringleader, R. R. Ballentine; sixth, L. & W. Second, Jas. Locke; seventh, Peerless Thickset, J. M. Wright.

Boar Eighteen Months and Under Two Years—First, Comptroller, A. Glenn; second, Upper Notch, Dr. R. W. Thomas; third, Gambler, Holland & Hanson; fourth, Spellbinder Chief, J. W. Garvey; fifth, Joker, Jno. Francis & Son; sixth, James, A. J. Lytle; seventh, Sunflower Sunshine, E. G. Tweed.

Boar One Year and Under Eighteen Months—First, Boxler, Edward Burroughs; second, Oriental, S. P. Chiles; third, Warrior, Frank D. Winn; fourth, Keep On Keepsake, Dr. R. W. Thomas; fifth, Star Leader, Charles D. Wellington; sixth, Prospect, J. W. Garvey; seventh, Reflector, Oliver W. Whiteman.

Boar Under Six Months—First, Teddy R., J. F. Bonner; second, R. G. Tweed; third, ————, E. M. Metzger; fourth, Leatherstockings, Frank D. Winn; fifth, ————, W. Z. Swallow; sixth, ————, James Locke; seventh, ————, J. M. Francis.

Boar Six Months and Under One Year—First, S. P.'s Choice, S. P. Chiles; second, Pilot, Frank D. Winn; third, ————, F. H. Gibbons; fourth, Corrector's Last, W. Z. Swallow; fifth, Capital, H. G. Boyer; sixth, Candidate, James Locke; seventh, Protector, Chas. D. Wellington.

Sow Two Years Old or Over—First, Margaret, James Francis & Son; second, Handsome, S. P. Chiles; third, Imp's Pocket, Frank Wolgamuth; fourth, Lady Blackhawk, A. P. Hoisington; fifth, Cinderella, Schrader & Sexsmith; sixth, Living Jewel, Andrew Rossow; seventh, Sister Sue, John Francis & Son.

Sow Eighteen Months and Under Two Years—First, ————, Frank D. Winn; second, Corrector's Best, W. Z. Swallow; third, Myrtle, John Francis & Son; fourth, Margaret, James Locke; fifth, Sally, John Francis & Son; sixth, Lady Walkover, W. L. Willey; seventh, Miss Rude's Lady, Schrader & Sexsmith.

Sow One Year and Under Eighteen Months—First, Grace Walkover 2d, Chas. D. Wellington; second, Oriental Queen, S. P. Chiles; third, Grace Walkover, C. D. Wellington; fourth, Classical Girl, F. Wolgamuth; fifth, Vanity Fair, Frank D. Winn; sixth, Fanny May, Dr. R. W. Thomas; seventh, Silverine, W. J. Hanson.

Sow Six Months and Under One Year—First, E. L. Perfection, A. Schwaller; second, Red Bud, Frank D. Winn; third, ————, Chas. D. Wellington; fourth, ————, J. Francis & Son; fifth, ————, Schrader & Sexsmith; sixth, Mistress Mary, James Locke; seventh, Lady Handsome, F. P. Sanders.

Sow Under Six Months—T. R.'s Daughter, J. F. Bonner; second, Keepsake's Choice, W. Z. Swallow; third, ————, Frank Winn; fourth, ————, Oscar Swallow; fifth, ————, J. R. Hoover & Son; sixth, ————, J. E. Francis; seventh, ————, James Locke.

Boar and Three Sows Over One Year—First, S. P. Chiles; second, Frank P. Winn; third, Frank Wolgamuth; fourth, Chas. D. Wellington; fifth, John Francis & Son; sixth, Dr. R. W. Thomas; seventh, James Locke.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Frank D. Winn; second, S. P. Chiles; third, Francis & Son; fourth, R. W. Thomas; fifth, James Locke; sixth, Oliver Whiteman.

Boar and Three Sows Under One Year—First, Frank D. Winn; second, J. F. Bonner; third, C. D. Wellington; fourth, W. Z. Swallow; fifth, A. Schwaller; sixth, James Locke; seventh, John Francis & Son.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, F. D. Winn; second, C. D. Wellington; third, W. Z. Swallow; fourth, A. Schwaller; fifth, J. Locke; sixth, Jno. Francis & Son; seventh, A. Schwaller.

Get of Sire—First, Jno. Francis & Son; second, S. P. Chiles; third, Frank D. Winn; fourth, Chas. D. Wellington; fifth, James W. Locke; sixth, J. T. Bonner.

Produce of Sow—First, Oscar Swallow; second, J. E. Francis; third, W. Z. Swallow; fourth, F. D. Winn; fifth, J. R. Hoover; sixth, James W. Locke; seventh, E. M. Metzger.

Champion Boar, Any Age—Vexer, Edward Burroughs.

Champion Sow, Any Age—Grace Walker II, C. D. Wellington.

Champion Boar, Any Age, Bred by Exhibitor—S. P.'s Choice, S. P. Chiles.

Champion Sow, Any Age, Bred by Exhibitor—Weeping Willow, F. D. Winn.

BERKSHIRES.

EXHIBITORS.

W. F. Dietrich, Menlo, Iowa; H. U. Hainline, Orient, Iowa; Mrs. W. R. Holt, Falls City, Neb.; W. R. Holt, Falls City, Neb.; C. L. Johnson, Nashua, Iowa; W. C. Knapp, Guthrie Center, Iowa; Forrest McPherson, Stuart, Iowa; J. C. Miller, Harlan, Iowa; T. W. Miller, Menlo, Iowa; J. M. McPherson & Son, Stuart, Iowa; F. E. Taylor, Menlo, Iowa; H. B. Turner, Elliott, Iowa; J. W. Ogle, Ames, Iowa.

AWARDS.

JUDGE....................N. H. GENTRY, Sedalia, Missouri.

Boar Two Years Old or Over—First, Longfellow's Premier, W. R. Holt; second, Starlight Victor 2nd, C. L. Johnson; third, Duke Cedar Height, H. U. Hainline; fourth, Quality of Iowa 5th, John C. Miller; fifth, General Logan, John McPherson; sixth, Modle E 2nd, C. L. Johnson

Boar Eighteen Months and Under Two Years—First, Premier Bell Duke, J. W. Ogle; second, Premier Bell Duke 2nd, H. D. Turner; third, Orphan Boy, W. R. Holt.

Boar One Year Old and Under Eighteen Months— First, Oriental Charmer, H. U. Hainline; second, F. B. Masterpiece, C. L. Johnson; third, Prince Lee, J. M. McPherson & Son; fourth, Major Mac, W. R. Holt; fifth, Starlight Lee D., Henry B. Turner.

Boar Six Months and Under One Year—First, Master of the Realm, J. W. Ogle; second, Model Premier, W. R. Holt; third, Royal Duke, Mrs. W. R. Holt; fourth, Model H. 5th Duke, H. U. Hainline; fifth, Longfellow King, W. R. Holt; sixth, Judas Duke, J. M. McPherson & Son; seventh, Premier Lord Masterpiece, J. W. Ogle.

Boar Under Six Months—First, T. W. Miller; second, J. W. Ogle; third, J. W. Ogle; fourth, F. E. Taylor; fifth, C. D. Johnson; sixth, H. U. Hainline; seventh, T. W. Miller.

Sow Two Years Old or Over—First, Tilden's Model, W. R. Holt; second, Model H. 5th, H. U. Hainline; third, Lady Lee 3rd, H. B. Turner; fourth, Lady Victor 27th, C. L. Johnson; fifth, Glover Long Lady, H. U. Hainline; sixth, Western D., J. M. McPherson & Son; seventh, March Lady Logan, John C. Miller.

Sow Eighteen Months and Under Two Years—First, Golden Queen, W. R. Holt; second, Lady Victor 26th, C. L. Johnson; third, Model C. 34, H. U. Hainline; fourth, Model C. 35, H. U. Hainline; fifth, Sadie Logan, J. M. McPherson & Son; sixth, Miss Elmwood, C. D. Michael.

Sow One Year and Under Eighteen Months—First, Crystal Brooks Perfection, Henry B. Turner; second, Logans Pride, J. M. McPherson & Son; third, Masters Queen 2nd, W. E. Dietrich; fourth, ————, W. R. Holt; fifth, Stout Lady Lee, H. B. Turner; sixth, ————, C. L. Johnson; seventh, Big Four 7th, John C. Miller.

Sow Six Months and Under One Year—First, Mack's Myrtle, J. M. McPherson & Son; second, Ida's Bell, Mrs. W. R. Holt; third, Rubertson of Rosedale, J. W. Ogle; fourth, Mack's Lady Logan, J. M. McPherson & Son; fifth, Longfellow's Lady, W. R. Holt; sixth, F. E. Taylor; seventh, ————, F. E. Taylor.

Sow Under Six Months—First, W. F. Dietrich; second; J. W. Ogle; third, W. F. Dietrich; fourth, J. W. Ogle; fifth, H. B. Turner; sixth, H. B. Turner; seventh, C. L. Johnson.

Boar and Three Sows Over One Year—First, W. R. Holt; second, H. U. Hainline; third, H. B. Turner, fourth, C. L. Johnson; fifth, J. M. McPherson; sixth, John C. Miller.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, C. L. Johnson; second, W. R. Holt; third, H. B. Turner.

Boar and Three Sows Under One Year—First, Mrs. W. R. Holt; second, J. M. McPherson & Son; third, T. W. Miller; fourth, J. W. Ogle; fifth, W. R. Holt; sixth, C. L. Johnson; seventh, H. B. Turner.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Mrs. W. R. Holt; second, J. M. McPherson & Son; third, T. W. Miller; fourth, J. W. Ogle; fifth, W. R. Holt; sixth, C. L. Johnson; seventh, H. B. Turner.

SPECIAL PRIZES OFFERED BY IOWA BERKSHIRE ASSOCIATION.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, J. M. McPherson & Son; second, T. W. Miller; third, J. W. Ogle.

Get of Sire—First, C. L. Johnson; second, J. M. McPherson & Son; third, Mrs. W. R. Holt; fourth, T. W. Miller; fifth, J. W. Ogle; sixth, C. L. Johnson; seventh, W. R. Holt.

Produce of Sow—First, T. W. Miller; second, J. W. Ogle; third, C. L. Johnson; fourth, H. B. Turner; fifth, F. E. Taylor; sixth, H. U. Hainline.

Champion Boar, Any Age—Premier Bell Duke, J. W. Ogle.

Champion Boar, Any Age, Bred by Exhibitor—Orient Charmer, H. U. Hainline.

Champion Sow, Any Age—Tilden's Model, W. R. Holt.

Champion Sow, Any Age, Bred by Exhibitor—Tilden's Model, W. R. Holt.

CHESTER WHITE.

EXHIBITORS.

Allen Bros., Russell, Iowa; J. L. Barber, Harlan, Iowa; R. P. Downing, Albia, Iowa; W. H. Dunbar, Jefferson, Iowa; B. M. Eastburn & Son, Hillsboro, Iowa; G. L. Emmert & Sons, Mason City, Iowa; Henninger Bros., Smith & Adams, Geneseo, Ill.; W. F. Hemmerling, Dike, Iowa; J. W. Hollowell, Richland, Iowa; A. B. Heath, Newell, Iowa; Humbert & White, Nashua, Iowa; Harman & Mansfield, Rhodes, Iowa; A. J. Johnson, Brighton, Iowa; J. A. Loughridge, Delta, Iowa; G. H. Lawshe, Defiance, Iowa; E. D. Leavens, Shell Rock, Iowa; Will Michael, Selma, Iowa; J. H. Mahannah, North English, Iowa; E. L. Nagle & Son, Deep River, Iowa; H. L. Orcutt, Monroe, Iowa; N. A. Ranck, Niota, Ill.; L. C. Reese, Prescott, Iowa; Henry Romberg, Williamsburg, Iowa; Wm. Whitted & Son, Monroe, Iowa; Melvin W. Young, Ankeny, Iowa.

AWARDS.

JUDGE......................W. Z. SWALLOW, Waukee, Iowa.

Boar Two Years Old or Over—First, O. K. Mikado, L. C. Reese; second, Boxer, Henry Romberg; third, Nashua Lad, J. L. Barber; fourth, Special, W. F. Hemmerling; fifth, Lengthy Boy, Stevens Bros.; sixth, Ted I Am, N. A. Ranck; seventh, Wonder, B. M. Eastburn & Son.

Boar Eighteen Months and Under Two Years—First, Highland Teddy, Allen Bros.; second, Nashua Boy 3rd, Humbert & White; third, Iowa Captain, Geo. H. Lawshe; fourth, ————, Humbert & White; fifth, ————, B. M. Eastburn & Sons; sixth, Niota Taft, H. A. Ranck.

Boar One Year and Under Eighteen Months—First, Christopher, E. L. Leavens; second, Perfection, L. C. Reese; third, Niota Win, N. A. Ranck; fourth, C. A.'s Model, Henninger Bros., Smith & Adams; fifth, ————, E. L. Leavens; sixth, Niota Bryan, N. A. Ranck; seventh, ————, R. P. Downing.

Boar Six Months and Under One Year—First, ————, L. C. Reese; second, Statesman O. K., J. H. Mahannah; third, Niota Kern, N. A. Ranck; fourth, ————, J. H. Mahannah; fifth, ————, L. C. Reese; sixth, Oskaloosa Lad, J. L. Barber; seventh, He's O. K., Henninger Bros., Smith & Adams.

Boar Six Months or Under—First, Peacemaker, E. L. Nagle & Son; second, Triumph O. K., J. H. Mahannah; third, Bob White, A. B. Heath; fourth, Daylight, E. W. Nagle & Son; fifth, ————, W. H. Dunbar; sixth, Jim's O. K., Henninger Bros., Smith & Adams; seventh, ————, A. B. Heath.

Sow Two Years Old or Over—First, Iola, E. L. Leavens; second, Samantha, B. M. Eastburn & Son; third, Maude S., Henninger Bros., Smith & Adams; fourth, Blanche 3rd, J. L. Barber; fifth, ————, E. L. Leavens; sixth, Oskaloosa O. K., J. H. Mahnanah; seventh, Orange Blossom, J. L. Barber.

Sow Eighteen Months and Under Two Years—First, Topsy, Henninger Bros., Smith & Adams; second, ————, L. C. Reese; third, J. H. Mahannah; fourth, ————, Humbert & White; fifth, ————, L. C. Reese.

Sow One Year and Under Eighteen Months—First, Tilly, E. L. Leavens; second, ————, L. C. Reese; third, Iola 4th, E. L. Leavens; fourth; ————, H. L. Orcutt; fifth, Mary Prophet II, Henninger Bros., Smith & Adams; sixth, ————, Geo. H. Lawshe; seventh, ————, Geo. H. Lawshe.

Sow Six Months and Under One Year—First, ————, L. C. Reese; second, ————, Humbert & White; third, Juanita O. K. VIII, J. H. Mahannah; fourth, Gem O. K. VII, J. H. Mahannah; fifth, ————, Wm. Whitted & Son; sixth, She's O, K.. Henninger Bros., Smith & Adams; seventh, Miss O. K., Henninger Bros., Smith & Adams.

Sow Under Six Months—First, Model L., F. L. Nagle & Son; second, Model J., E. L. Nagle & Son; third, Juanita O. K. IV, J. H. Mahannah; fourth, Juanita, J. H. Mahannah; fifth, ————, Wm. Whitted & Son; sixth, Little Nell, W. H. Dunbar; seventh, Molly Gray, A. B. Heath.

Boar and Three Sows Over One Year—First, E. L. Leavens; second, L. C. Reese; third, J. L. Barber; fourth, Henninger Bros., Smith & Adams; fifth, E. L. Leavens; sixth, J. H. Mahannah; seventh, W. F. Hemmerling.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, E. L. Leavens; second, L. C. Reese; third, Henninger Bros., Smith & Adams; fourth, E. L. Leavens; fifth, Humbert & White; sixth, Geo. H. Lawshe.

Boar and Three Sows Under One Year—First, L. C. Reese; second, E. L. Nagle & Son; third, J. L. Barber; fourth, J. H. Mahannah; fifth, Henninger Bros, Smith & Adams; sixth, A. B. Heath.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, L. C. Reese; second, E. L. Nagle & Son; third, J. L. Barber; fourth, J. H. Mahannah; fifth, Henninger Bros., Smith & Adams; sixth, A. B. Heath; seventh, A. J. Johnson.

Get of Sire—First, E. L. Leavens; second, L. C. Reese; third, E. L. Nagle & Son; fourth, Henninger Bros., Smith & Adams; fifth, L. C. Reese; sixth, J. H. Mahannah; seventh, J. W. Hollowell.

Produce of Sow—First, E. L. Nagle & Son; second, Wm. Whitted & Son; third, Henninger Bros., Smith & Adams; fourth, J. H. Mahannah; fifth, A. B. Heath.

Champion Boar, Any Age—O. K. Mikado, L. C. Reese.

Champion Sow, Any Age—Iola, E. L. Leavens.

Champion Boar, Any Age, Bred by Exhibitor—Christopher I, E. L. Leavens.

Champion Sow, Any Age, Bred by Exhibitor—Iola, E. L. Leavens.

DUROC JERSEYS.

EXHIBITORS.

A. J. Alsin, Boone, Iowa; H. S. Allen, Russell, Iowa; J. B. Ashby, Audubon, Iowa; Balmat & Son, Mason City, Iowa; A. L. Bergsten, Winfield, Iowa; L. Baker, Mingo, Iowa; W. R. Bennethum, Madrid, Iowa; Walter Bowen, Neola, Iowa; E. M. Castle & Son, Joy, Ill.; Cooper & Co., Ferris, Ill.; Cornell Bros., Laurel, Iowa; M. C. Cramer, Monroe, Iowa; O. H. Chitty, Toledo, Iowa; E. J. Compton, Newell, Iowa; J. A. Cottingham, Indianola, Iowa; Dr. J. A. Downs, Glidden, Iowa; U. G. Davidson, Scranton, Iowa; Easton Bros., Ida Grove, Iowa; F. Fowler & Son, Menlo, Iowa; S. P. Freed, Ames, Iowa; Fagen, Browning & McCabe, Hersman, Ill.; H. B. Griffitts, Bowen, Ill.; E. H. Gifford, Lewistown, Neb.; F. E. Garrett, Lohrville, Iowa; F. W. Geno, Sigourney, Iowa; Hammer & Seaman, Jefferson, Iowa; Amos Harris & Sons, Morganfield, Ky.; John Hamman, Nauvoo, Ill.; S. L. Hopper, Neola, Iowa; F. H. Herring, Kalona, Iowa; Hanks & Bishop, New London, Iowa; Edwin Hummer, Iowa City, Iowa; G. W. Hockett, Manning, Iowa; Claude Huffman, Scranton, Iowa; W. H. Hudson, Lohrville, Iowa; R. J. Harding, Macedonia, Iowa; H. M. Jones, Berwick, Iowa; Ira Jackson, Tippecanoe City, Ohio; John Justice, Ankeny, Iowa; Johnston Bros. & Newkirk, Brooklyn, Iowa; S. A .Jones, Lohrville, Iowa; Kraschel Bros., Macon, Ill.; W. D. Kail, Carlisle, Iowa; W. F. Kilpatrick, Harlan, Iowa; O. A. Kilpatrick, Harlan, Iowa; Chas. Kilpatrick, Harlan, Iowa; A. A. Lein, Story City, Iowa; C. E. Longnecker, Maxwell, Iowa; H. W. Lineweaver, South English, Iowa; Leonard Lunblad, Pilot Mount, Iowa; A. D. Mackrill, Platte, S. D.; G. R. Manifold & Son, Shannon City, Iowa; E. D. Michael, Selma, Iowa; Oscar Miller, Loami, Ill.; G. H. Miller, Chariton, Iowa; H. M. Moore, Orient, Iowa; B. C. Marts, Polk City, Iowa; Chas. G. McGinnis, Nevinville, Iowa; A. L. Massman, Radcliffe, Iowa; M. S. Moats & Son, Randolph, Neb.; G. A. Munson, Maxwell, Iowa; J. S. Moore, Wadena, Iowa; D. Nauman, West Liberty, Iowa; John Norris, Audubon, Iowa; O. E. Osborn, Weston, Iowa; A. W. H. Orr, Lorimar, Iowa; W. J. Prather, Russell, Iowa; G. H. Purdy, Mason City, Iowa; A. J. Pinck, Maxwell, Iowa; D. J. Pollock, Thayer, Iowa; J. G. Parker, Harlan, Iowa; L. H. Roberts & Son, Paton, Iowa; E. Z. Russell, Blair, Neb.; W. H. Rodenbough, Macedonia, Iowa; C. H. & A. J. Reisser, Sanborn, Iowa; J. O. Reece & Co., Eldora, Iowa; E. B. Ryan, Neola, Iowa; J. E. Smith, Victor, Iowa; A. T. Sundell, Paton, Iowa; G. W. Stout, Rose Hill, Iowa; Aug. Sonneland, Harlan, Iowa; Sexsmith & Strong, Orient, Iowa; W. M. Sells, Indianola, Iowa; C. O. Thornburg, Pleasantville, Iowa; L. E. Thomas, Golden, Ill.; F. S. Taylor, Wellman, Iowa; L. R. Van Nice, Russell, Iowa; C. E. Veak, Essex, Iowa; J. J. Vosika, Pocahontas, Iowa; A. N. Voge, Portsmouth, Iowa; Waltermeyer Bros., Milbourne, Iowa; J. G. Winslow, Neola, Iowa; J. E. Wehr, Portsmouth, Iowa; W. L. Willey, Menlo, Iowa; White & Dewey, Afton, Iowa.

AWARDS.

JUDGE............................N. H. GENTRY, Sedalia, Mo.

Boar Two Years Old or Over—First, Model Chief 2nd, Johnson Bros. & Newkirk; second, Model Prince, C. E. Veak; third, Iowa Notchness, Easton Bros.; fourth, Model Chief 3d, G. W. Hockett; fifth, Daisy Advance, Geo. H. Miller; sixth, Wonder Boy, Cooper & Co.; seventh, Iowa Chief, Belmat & Son.

Boar Eighteen Months and Under Two Years—First, Express Package, Fagen, Browning & McCabe; second, Teinsin No. 2, A. L. Massman; third, Cash Register, L. E. Thomas; fourth, Proud Chief, E. Z. Russell; fifth, Aristocrat, Easton Bros.; sixth, Bright Man, B. J. Pollock; seventh, B. S. Crimson Winner, A. J. and C. H. Reisser.

Boar One Year and Under Eighteen Months—First, The King, H. B. Griffiths; second, Guthrie Chief, D. R. Wilson; third, Model Top, W. R. Bennethum; fourth, Russell's Critic, E. Z. Russell; fifth, Hogate's Model, O. A. Kilpatrick; sixth, Buddy's Critic, Jr., J. E. Wehr; seventh, Jumbo Critic, Jr., E. Z. Russell.

Boar Six Months and Under One Year—First, Red Jim, F. Fowler & Son; second, Chief Protection, R. J. Harding; third, Belle's Wonder, Sexsmith & Strong; fourth, Model Prince 2nd, C. E. Veak; fifth, Tip's Chief, S. L. Hopper; sixth, Advance Tientsin, Belmat & Son; seventh, Highball, Kraschel Bros.

Boar Under Six Months—First, ————, O. A. Kilpatrick; second, Baker's Keep On, F. Fowler & Son; third, ————, W. F. Kilpatrick; fourth, ————, Balmat & Son; fifth, ————, G. A. Munson; sixth, ————, J. S. Moore; seventh, ————, W. M. Sells.

Sow Two Years Old or Over—First, Barbara Queen, H. M. Moore; second, Hazel D. 3d, A. L. Massman; third, S. E. Model 8th, J. B. Ashby; fourth, Iowa Bell, Belmat & Son; fifth, Alberta, Hammer & Seaman; sixth, Lady Proud, White & Dewey; seventh, Notcher's Lena, Easton Bros.

Sow Eighteen Months and Under Two Years—First, Clarmont Pride, J. B. Ashby; second, Browning's Choice, Fagen, Browning & McCabe; third, Ruth V., A. L. Massman; fourth, Ruburta Best, S. A. Jones; fifth, Proud Maggie, White & Dewey; sixth, Model Queen 4th, Claude Huffman seventh, Ruburta's Lady, J. O. Reese & Co.

Sow One Year and Under Eighteen Months—First, Proud Sixteen, C. E. Veak; second, I Am a Crimston Wonder, U. G. Davidson; third, Model Girl, W. R. Bennethum; fourth, Valley Jewell 3d, Sexsmith & Strong; fifth, Valley Jewell 2nd, Sexsmith & Strong; sixth, Advance Maiden, S. A. Jones; seventh, Model Choice 3d, Balmat & Son.

Sow Six Months and Under One Year—First, Mona, Fagen, Browning & McCabe; second, Chief Proud Lady, R. J. Harding; third, Claremont Pet, J. B. Ashby; fourth, Model Daisy, C. E. Veak; fifth, Darling, J. E. Weaver; sixth, Lady Paul, E. M. Castle & Son; seventh, Tientsin Lady, F. E. Garrett.

Sow Under Six Months—First, Minnie Wonder, H. S. Allen; second, Myrtle Crimson Wonder, W. M. Sells; third, Clovercloth Chieftess, Dr. J. A. Downs; fourth, Claude Huffman; fifth, Claude Huffman; sixth, Sexsmith & Strong; seventh, O. A. Kilpatrick.

Boar and Three Sows Over One Year—First, Johnson Bros. & Newkirk; second, Fagen, Browning & McCabe; third, Balmat & Son; fourth, Easton Bros.; fifth, Sexsmith & Strong; sixth, G. W. Hockett; seventh, White & Dewey.

Boar and Three Sows Over One Year Bred by Exhibitor—First, Johnson Bros. & Newkirk; second, Easton Bros.; third, Sexsmith & Strong; fourth, G. W. Hockett; fifth, White & Dewey; sixth, H. S. Allen; seventh, E. M. Castle & Son.

Boar and Three Sows Under One Year—First, Johnson Bros. & Newkirk; second, G. W. Hockett; third, C. E. Veak; fourth, E. M. Castle & Son; fifth, H. S. Allen; sixth, E. Z. Russell; seventh, R. J. Harding.

Boar and Three Sows Under One Year Bred by Exhibitor—First, Johnson Bros. & Newkirk; second, G. W. Hockett; third, C. E. Veak; fourth, E. M. Castle & Son; fifth, H. S. Allen; sixth, E. Z. Russell; seventh, R. J. Harding.

Get of Sire—First, Johnson Bros. & Newkirk; second, W. R. Bennethum; third, White & Dewey; fourth, J. E. Wehr; fifth, Sexsmith & Strong; sixth, G. W. Hockett; seventh, E. M. Castle & Son.

Produce of Sow—First, W. M. Sells; second, Johnson Bros. & Newkirk; third, Balmat & Son; fourth, W. F. Kilpatrick; fifth, Chas. Kilpatrick; sixth, Dr. J. A. Downs; seventh, H. S. Allen.

Champion Boar, Any Age—Model Chief 2nd, Johnson Bros. & Newkirk.

Champion Sow, Any Age—Barbara Queen, H. M. Moore.

Champion Boar, Any Age, Bred by Exhibitor—Model Chief 2nd, Johnson Bros. & Newkirk.

Champion Sow, Any Age, Bred by Exhibitor—Hazel D. 3d, A. F. Massman & Son.

LARGE YORKSHIRES.

EXHIBITORS.

B. F. Davidson, Menlo, Iowa.

JUDGE.........................J. J. FERGUSON, Chicago, Ill.

There being only one exhibitor in this class first premium in each division in which he had entries was awarded on recommendation of the judge and superintendent to B. F. Davidson, Menlo, Iowa.

TAMWORTHS.

J. W. Justice, Kalona, Iowa; Jas. P. McCollom, Nauvoo, Ill.; C. C. Roup, Kalona, Iowa; E. O. Thomas, Kalona, Iowa.

AWARDS.

JUDGE........................J. J. FERGUSON, Chicago, Ill.

Boar Two Years Old or Over—First, Profit Farm Royal, Jas. P. McCollom; second, Sir George, C. C. Roup; third, Sherwood Farm Fannie, Jas. P. McCollom.

Boar Eighteen Months and Under Two Years—First, Springbrook Burn, E. O. Thomas; second, Duke of Sir George, Jas. P. McCollom; third, Sherman Prince, J. W. Justice.

Boar One Year and Under Eighteen Months—First, Red Wonder, J. W. Justice; second, Cushman 2nd, C. C. Roup; third, Profit Farm Duke, Jas. P. McCollom; fourth, Profit Farm Matthew, Jas. P. McCollom.

Boar Six Months and Under One Year—First, C. C. Roup; second, C. C. Roup; third, J. W. Justice; fourth, E. O. Thomas; fifth, J. W. Justice.

Boar Under Six Months—First, J. W. Justice; second, C. C. Roup; third, E. O. Thomas; fourth, J. W. Justice; fifth, C. C. Roup.

Sow Two Years Old or Over—First, Lady Onward, C. C. Roup; second, Profit Farm Martha, James P. McCollom; third, Zela, J. W. Justice; fourth, State's Lady, J. W. Justice; fifth, Maple Hurst Dora, C. C. Roup.

Sow Eighteen Months and Under Two Years—First, Lady Rose, E. O. Thomas; second, Hillcrest May 4th, Jas. P. McCollom.

Sow One Year and Under Eighteen Months—First, Maple Hurst Bell, C. C. Roup; second, Red Rose, J. W. Justice; third, Profit Farm Julia, Jas. P. McCollom; fourth, Profit Farm Ethel, Jas. P. McCollom; fifth, Orient Lady, J. W. Justice.

Sow Six Months and Under One Year—First, C. C. Roup; second, C. C. Roup; third, J. W. Justice; fourth, E. O. Thomas; fifth, J. W. Justice.

Sow Under Six Months—First, C. C. Roup; second, J. W. Justice; third, C. C. Roup; fourth, J. W. Justice; fifth, E. O. Thomas.

Boar and Three Sows Over One Year Old—First, J. W. Justice; second, Jas. P. McCollom; third, C. C. Roup.

Boar and Three Sows Under One Year—First, C. C. Roup; second, J. W. Justice; third, E. O. Thomas; fourth, C. C. Roup; fifth, E. O. Thomas.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Jas. P. McCollom.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, C. C. Roup; second, J. W. Justice; third, E. O. Thomas; fourth, C. C. Roup; fifth, E. O. Thomas.

Get of Sire—First, C. C. Roup; second, J. P. McCollom; third, J. W. Justice; fourth, E. O. Thomas; fifth, C. C. Roup.

Produce of Sow—First, J. W. Justice; second, C. C. Roup; third, E. O. Thomas.

Champion Boar, Any Age—Profit Farm Longfellow, Jas. P. McCollom.

Champion Boar, Any Age, Bred by Exhibitor—Profit Farm Longfellow, J. P. McCollom.

Champion Sow, Any Age—Lady Onward, C. C. Roup.

Champion Sow, Any Age, Bred by Exhibitor—Lady Onward, C. C. Roup.

HAMPSHIRES.

EXHIBITORS.

Hughes Atkinson, Mt. Sterling, Ill.; W. J. Brinigar, Blythedale, Mo.; R. L. Bollman, Coal Valley, Ill.; DeKalb & Smith, DeKalb, Ill.; G. M. Dodds, Kenton, Ohio; A. L. Goodenough, Morristown, Ill.; Frank Morrill & Co.; Niota, Ill.; E. C. Stone, Armstrong, Ill.

AWARDS.

JUDGE....................J. J. FERGUSON, Chicago, Illinois.

Boar Two Years Old or Over—First, Missouri King, Hughes Atkinson; second, Legal Tender, A. L. Goodenough; third, Englander, E. C. Stone; fourth, Blythedale Duke, W. J. Brinigar; fifth, Gold Crown, R. L. Bollman.

Boar Eighteen Months and Under Two Years—First, Duke of Longview, H. Atkinson; second, Stone's Monarch, E. C. Stone; third, Missouri King 2nd, W. J. Brinigar; fourth, Top Round, R. L. Bollman; fifth, Kentucky King, E. C. Stone.

Boar One Year and Under Eighteen Months—First, Duke of Niota, Frank Morrill Co.; second, Bon Bon Beauty, A. L. Goodenough; third, Billy Sunday, R. L. Bollman; fourth, Aylor, E. C. Stone; fifth, Monarch of Maple Leaf, A. L. Goodenough.

Boar Six Months and Under One Year—First, Frank Morrill & Co.; second, Hughes Atkinson; third, E. C. Stone; fourth, E. C. Stone; fifth, W. J. Brinigar.

Boar Under Six Months—First, Frank Morrill & Co.; second, Frank Morrill & Co.; third, Hughes Atkinson; fourth, E. C. Stone; fifth, W. J. Bollman.

Sow Two Years Old or Over—First, Miss Quality, A. L. Goodenough; second, Beauty's Best, A. L. Goodenough; third, Lady Miles 3rd, E. C. Stone; fourth, Catalpa 3rd, Frank Morrill & Co.; fifth, Gold Cup, R. L. Bowman.

Sow Eighteen Months and Under Two Years—First, Perfection, E. C. Stone; second, Sylvia, A. L. Goodenough; third, Maud, A. L. Goodenough; fourth, Longview, H. Atkinson; fifth, Catalpa Lass, F. Morrill & Co.

Sow One Year Old and Under Eighteen Months—First, King's Perfection, E. C. Stone; second, Merry Widow, R. L. Bollman; third, Queen of Longview, F. Morrill & Co.; fourth, Evalyn 2nd, A. E. Goodenough; fifth, Minnie, A. L. Goodenough.

Sow Six Months and Under One Year—First, Hughes Atkinson; second, Hughes Atkinson; third, R. L. Bollman; fourth, W. J. Brinigar; fifth, E. C. Stone.

Sow Under Six Months—First, A. L. Goodenough; second, E. C. Stone; third, H. Atkinson; fourth, W. J. Brinigar; fifth, W. J. Brinigar.

Boar and Three Sows Over One Year—First, E. C. Stone; second, A. L. Goodenough; third, Hughes Atkinson; fourth, R. L. Bollman; fifth, E. C. Stone.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, E. C. Stone; second, A. L. Goodenough; third, H. Atkinson; fourth, R. L. Bollman.

Boar and Three Sows Under One Year—First, Hughes Atkinson; second, R. L. Bollman; third, E. C. Stone; fourth, W. J. Brinigar; fifth, Frank Morrill & Co.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Hughes Atkinson; second, R. L. Bollman; third, E. C. Stone; fourth, W. J. Brinigar; fifth, Frank Morrill & Co.

Get of Sire—First, E. C. Stone; second, A. L. Goodenough; third, Hughes Atkinson; fourth, Hughes Atkinson; fifth, R. L. Bollman.

Produce of Sow—First, Hughes Atkinson; second, W. J. Brinigar; third, E. C. Stone; fourth, Frank Morrill & Co.; fifth, A. L. Goodenough.

Champion Boar, Any Age—Morrill Duke, Frank Morrill & Co.

Champion Sow, Any Age—Perfection, E. C. Stone.

Champion Boar, Any Age, Bred by Exhibitor— Duke of Longview, Hughes Atkinson.

Champion Sow, Any Age, Bred by Exhibitor—Perfection, E. C. Stone.

SHEEP DEPARTMENT.

SUPERINTENDENT................H. L. PIKE, Whiting, Iowa.

MERINOS, AMERICAN, SPANISH OR DELAINE.

EXHIBITORS.

Uriah Cook & Son, Peoria, Ohio; E. M. Moore, Orchard Lake, Mich.; Robert Taylor, Abbott, Neb.

AWARDS.

JUDGE....................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, Uriah Cook & Son; second, Uriah Cook & Son; third, E. M. Moore.

Ram One Year Old and Under Two—First, Uriah Cook & Son; second, E. M. Moore.

Ram Lamb—Uriah Cook & Son; second, E. M. Moore.

Ewe Two Years Old or Over—First, Uriah Cook & Son; second, E. M. Moore.

Ewe One Year Old and Under Two—First, Uriah Cook & Son; second, E. M. Moore.

Ewe Lamb—First, Uriah Cook & Son; second, E. M. Moore; third, E. M. Moore.

Get of Sire—First, Uriah Cook & Son; second, E. M. Moore.

Flock—First, Uriah Cook & Son; second, E. M. Moore.

Champion Pure Bred Ram, Any Age—Uriah Cook & Son.

Champion Pure Bred Ewe, Any Age—Uriah Cook & Son.

RAMBOUILLET.

EXHIBITORS.

Max Chapman, Marysville, Ohio; E. M. Moore, Orchard Lake, Mich.; Robt. Taylor, Abbott, Neb.

AWARDS.

JUDGE.........................G. W. HERVEY, Omaha, Nebraska.

Ram Two Years Old or Over—First, E. M. Moore; second, Robt. Taylor; third, Robt. Taylor.

Ram One Year Old and Under Two—First, Robt. Taylor; second, E. M. Moore; third, Robt. Taylor.

Ram Lamb—First, E. M. Moore; second, Robt. Taylor; third, Max Chapman.

Ewe Two Years Old or Over—First, E. M. Moore; second, E. M. Moore; third, Max Chapman.

Ewe One Year Old and Under Two—First, E. M. Moore; second, Robt. Taylor; third, E. M. Moore.

Ewe Lamb—First, E. M. Moore; second, Max Chapman; third, E. M. Moore.

Get of Sire—First, E. M. Moore; second, Robt. Taylor.

Flock—First, E. M. Moore; second, Robt. Taylor.

Champion Pure Bred Ram, Any Age—E. M. Moore.

Champion Pure Bred Ewe, Any Age—E. M. Moore.

COTSWOLDS.

EXHIBITORS.

F. W. Harding, Waukesha, Wis.; Lewis Bros., Camp Point, Ill.

AWARDS.

JUDGE....................JOHN A. CRAIG, San Antonio, Texas.

Ram Two Years Old or Over—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ram One Year Old and Under Two—First, F. W. Harding; second, F. W. Harding; third, Lewis Bros.

Ram Lamb—First, F. W. Harding; second, F. W. Harding.

Ewe One Year Old and Under Two—First, F. W. Harding; second, F. W. Harding; third, Lewis Bros.

Ewe Two Years Old or Over—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ewe Lamb—First, F. W. Harding; second, F. W. Harding; third, Lewis Bros.

Get of Sire—F. W. Harding.

Flock—First, F. W. Harding; second, F. W. Harding.

Champion Pure Bred Ram, Any Age—F. W. Harding.

Champion Pure Bred Ewe, Any Age—F. W. Harding.

LEICESTERS.

EXHIBITORS.

Robert Taylor, Abbott, Neb.

AWARDS.

Judge..................John A. Craig, San Antonio, Texas.

Ram Two Years Old or Over—First, Robt. Taylor.

Ram One Year Old and Under Two—First, Robt. Taylor.

Ram Lamb—First, Robt. Taylor; second, Robt. Taylor.

Ewe Two Years Old or Over—First, Robt. Taylor; second, Robt. Taylor.

Ewe One Year Old and Under Two—First, Robt. Taylor; second, Robt. Taylor.

Ewe Lamb—First, Robt. Taylor; second, Robt. Taylor.

Get of Sire—First, Robt. Taylor.

Flock—First, Robt. Taylor; second, Robt. Taylor.

Champion Pure Bred Ram—Any Age—Robt. Taylor.

Champion Pure Pred Ewe, Any Age—Robt. Taylor.

LINCOLNS.

EXHIBITORS.

Alex Arnold, Galesville, Wis.

AWARDS.

Judge..................John A. Craig, San Antonio, Texas.

Ram Two Years Old or Over—First, Alex. Arnold; second, Alex Arnold.

Ram One Year Old and Under Two—First, Alex Arnold; second, Alex Arnold.

Ram Lamb—First, Alex Arnold; second, Aelx Arnold.

Ewe Two Years Old or Over—First, Alex Arnold; second, Alex Arnold.

Ewe One Year Old and Under Two—First, Alex Arnold; second, Alex Arnold.

Ewe Lamb—First, Alex Arnold; second, Alex Arnold.

Get of Sire—First, Alex Arnold.

Flock—First, Alex Arnold; second, Alex Arnold.

Champion Pure Bred Ram, Any Age—Alex Arnold.

Champion Pure Bred Ewe, Any Age—Alex Arnold.

HAMPSHIRE DOWNS.

EXHIBITORS.

Alex W. Arnold, Galesville, Wis.; F. W. Harding, Waukesha, Wis.; Robt. Taylor, Abbot, Neb.

AWARDS.

JUDGE..........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First and second, F. W. Harding; third, Alex W. Arnold.

Ram One Year Old and Under Two—First and second, F. W. Harding; third, Robt. Taylor.

Ram Lamb—First, second and third, F. W. Harding.

Ewe Two Years Old—First and second, F. W. Harding.

Ewe One Year Old and Under Two—First, second and third, F. W. Harding.

Ewe Lamb—First, second and third, F. W. Harding.

Get of Sire—First, F. W. Harding; second, Robert Taylor.

Flock—First and second, F. W. Harding.

Champion Ram, Any Age—F. W. Harding.

Champion Ewe, Any Age—F. W. Harding.

SOUTHDOWNS.

EXHIBITORS.

Geo. McKerrow & Sons, Pewaukee, Wis.

AWARDS.

JUDGE..........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Ewe Lamb—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Flock—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Champion Pure Bred Ram, Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

SHROPSHIRES.

EXHIBITORS.

J. M. & L. E. Bauer, Jameson, Mo.; Blanchar Bros., Winnebago, Minn.; Chandler Bros., Chariton, Iowa; Ralph Findley, Monmouth, Ill.; W. L. Farmer, Indianola, Iowa; J. S. Fawcett & Sons, Springdale, Iowa; F. W. Harding, Waukesha, Wis.; Kauffmann Bros., Moscow, Iowa; A. J. Lytle, Oskaloosa, Iowa; Geo. McKerrow & Sons, Pewaukee, Wis.; F. P. McAdoo, Indianola, Iowa; O. H. Peasley & Sons, Indianola, Iowa; J. L. Plumly, Martelle, Iowa; W. A. Taylor, Ames, Iowa.

AWARDS.

JUDGE........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, Chandler Bros.; third, Geo. McKerrow & Sons.

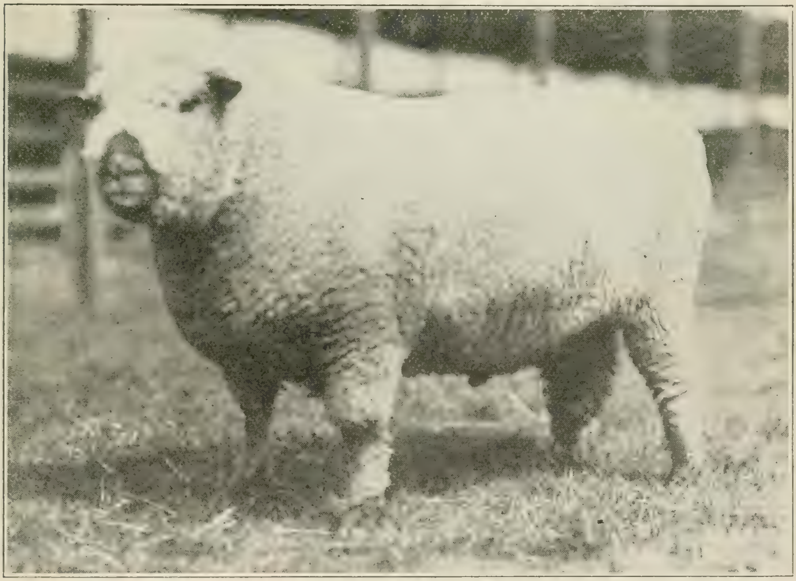
Ram One Year Old and Under Two—First, J. M. & L. E. Bauer; second, Geo. McKerrow & Sons; third, Geo. McKerrow & Sons.

Ram Lamb—First, Chandler Bros.; second, J. M. & L. E. Bauer; third, Geo. McKerrow & Sons.

Ewe Two Years Old or Over—First, George McKerrow & Sons; second, Chandler Bros.; third, Geo. McKerrow & Sons.

Ewe One Year Old and Under Two—First, Chandler Bros.; second, Geo. McKerrow & Sons; third, J. M. & L. E. Bauer.

Ewe Lamb—First, Chandler Bros.; second, J. M. & L. E. Bauer; third, Geo. McKerrow & Sons.



First Prize Shopshire Ram Lamb,
Iowa State Fair and Exposition, 1908.

Get of Sire—First, O. H. Peasley & Sons; second, J. L. Plumly; third, W. L. Farmer.

Flock—First, Chandler Bros.; second, McKerrow & Sons.

Champion Pure Bred Ram, Any Age—J. M. & L. E. Bauer.

Champion Pure Bred Ewe, Any Age—Chandler Bros.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

AWARDS.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, J. L. Plumly; third, Kaufmann Bros.

Ram One Year Old and Under Two—First and second, Blanchar Bros.; third, J. L. Plumly.

Ram Lamb—First, J. L. Plumly; second and third, O. H. Peasley & Sons.

Ewe Two Years Old or Over—First and third, Kaufmann Bros.; second, O. H. Peasley.

Ewe One Year Old and Under Two—First, Blanchar Bros.; second and third, J. L. Plumly.

Ewe Lamb—First and second, O. H. Peasley & Sons; third, J. L. Plumly.

Champion Ram, Any Age—Geo. McKerrow & Sons.

Champion Ewe, Any Age—Blanchar Bros.

Get of Sire—First, O. H. Peasley & Sons; second, J. L. Plumly.

Flock—First, O. H. Peasley & Sons; second, J. L. Plumly; third, Blanchar Bros.

IOWA SHROPSHIRES.

EXHIBITORS.

W. L. Farmer, Indianola, Iowa; Kaufmann Bros., Moscow, Iowa; F. P. McAdoo, Indianola, Iowa; O. H. Peasley & Sons, Indianola, Iowa; J. L. Plumly, Martelle, Iowa.

AWARDS.

JUDGE........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, J. L. Plumly; second, J. L. Plumly; third, O. H. Peasley & Sons; fourth, O. H. Peasley & Sons; fifth, Kauffmann Bros.; sixth, Kaufmann Bros.

Ram One Year Old and Under Two—First, J. L. Plumly; second, J. L. Plumly; third, J. L. Plumly; fourth, Kaufmann Bros.; fifth, Kaufmann Bros.; sixth, O. H. Peasley & Sons; seventh, O. H. Peasley & Sons.

Ram Lamb—First, J. L. Plumly; second, O. H. Peasley & Sons; third, O. H. Peasley & Sons; fourth, J. L. Plumly; fifth, J. L. Plumly; sixth, O. H. Peasley & Sons; seventh, F. P. McAdoo.

Ewe Two Years Old or Over—First, O. H. Peasley & Sons; second, Kaufmann Bros.; third, J. L. Plumly; fourth, J. L. Plumly; fifth, O. H. Peasley & Sons; sixth, Kaufmann Bros.; seventh, J. L. Plumly.

Ewe One Year Old and Under Two—First, J. L. Plumly; second, J. L. Plumly; third, J. L. Plumly; fourth, J. L. Plumly; fifth, O. H. Peasley & Sons; sixth, J. L. Plumly; seventh, Kaufmann Bros.

Ewe Lamb—First, O. H. Peasley & Sons; second, O. H. Peasley & Sons; third, J. L. Plumly; fourth, J. L. Plumly; fifth, J. L. Plumly; sixth, Kaufmann Bros.

Get of Sire—First, J. L. Plumly; second, Kaufmann Bros.; third, W. L. Farmer.

Flock—First, O. H. Peasley & Sons; second, J. L. Plumly; third, Kaufmann Bros.

Champion Pure Bred Ram, Any Age—J. L. Plumly.

Champion Pure Bred Ewe, Any Age—O. H. Peasley & Sons.

Three First Prize Shopshire Rams,
Iowa State Fair and Exposition, 1908.

OXFORD DOWNS.

EXHIBITORS.

John Graham & Son, Eldora, Iowa; Geo. McKerrow & Sons, Pewaukee, Wis.; F. P. McAdoo, Indianola, Iowa.

AWARDS.

JUDGE..........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons.

Ram One Year Old and Under Two—First, John Graham & Son; second, Geo. McKerrow & Sons; third, Geo. McKerrow & Sons.

Ram Lamb—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons; third, John Graham.

Ewe Two Years Old or Over—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons; third, F. P. McAdoo.

Ewe One Year Old and Under Two—First, Geo. McKerrow & Sons; second, John Graham; third, Geo. McKerrow & Sons.

Ewe Lamb—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons; third, John Graham.

Get of Sire—First, John Graham.

Flock—First, Geo. McKerrow & Sons; second, Geo. McKerrow & Sons. Sons.

Champion Pure Bred Ram, Any Age—Geo. McKerrow & Sons.

Champion Pure Bred Ewe, Any Age—Geo. McKerrow & Sons.

SPECIAL PRIZES BY AMERICAN OXFORD RECORD ASSOCIATION.

Best Yearling Ram—First, John Graham & Son; second, John Graham & Son.

Best Yearling Ewe—First, John Graham & Son; second, John Graham & Son.

Best Pen of Four Lambs, Either Sex—First, John Graham & Son; second, John Graham & Son.

IOWA OXFORD DOWNS.

EXHIBITORS.

John Graham & Son, Eldora, Iowa; F. P. McAdoo, Indianola, Iowa.

AWARDS.

JUDGE........................J. A. McLEAN, Ames, Iowa.

Ram One Year Old and Under Two—First, John Graham & Son; second, John Graham & Son.

Ram Lamb—First, John Graham & Son; second, John Graham & Son; third, F. P. McAdoo.

Ewe Two Years Old or Over—First, F. P. McAdoo; second, F. P. McAdoo; third, John Graham & Son.

Ewe One Year Old and Under Two—First, John Graham & Son.

Ewe Lamb—First, John Graham & Son; second, John Graham & Son; third, F. P. McAdoo.

Get of Sire—First, John Graham & Son; second, John Graham & Son.

Flock—First, John Graham & Son.

Champion Pure Bred Ram, Any Age—John Graham & Son.

Champion Pure Bred Ewe, Any Age—F. P. McAdoo.

DORSETS.

EXHIBITORS.

F. K. Crossman, Arlington Heights, Ill.; F. W. Harding, Waukesha, Wis.; Harry H. Wheeler, Elburn, Ill.

AWARDS.

JUDGE..........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, H. H. Wheeler; second, F. K. Crossman.

Ram One Year and Under Two—First, F. W. Harding; second, F. K. Crossman; third, H. H. Wheeler.

Ram Lamb—First, H. H. Wheeler; second, H. H. Wheeler; third, F. K. Crossman.

Ewe Two Years Old and Over—First, F. K. Crossman; second, F. K. Crossman.

Ewe One Year and Under Two—First, F. W. Harding; second, F. K. Crossman; third, F. K. Crossman.

Ewe Lamb—First, F. K. Crossman; second, F. K. Crossman; third, H. H. Wheeler.

Get of Sire—First, F. K. Crossman; second, H. H. Wheeler.

Flock—F. K. Crossman.

Champion Pure Bred Ram, Any Age—F. W. Harding.

Champion Pure Bred Ewe, Any Age—F. W. Harding.

CHEVIOTS.

EXHIBITORS.

Alex W. Arnold, Galesville, Wis.; G. W. Parnell, Wingate, Ind.

AWARDS.

JUDGE..........................J. A. McLEAN, Ames, Iowa.

Ram Two Years Old or Over—First, G. W. Parnell; second, G. W. Parnell; third, Alex W. Arnold.

Ram One Year Old and Under Two—First, G. W. Parnell; second, G. W. Parnell; third, G. W. Parnell.

Ram Lamb—First, G. W. Parnell; second, G. W. Parnell; third, A. W. Arnold.

Ewe Two Years Old or Over—First, G. W. Parnell; second, A. W. Arnold; third, A. W. Arnold.

Ewe One Year Old and Under Two—First, G. W. Parnell; second, A. W. Arnold; third, G. W. Parnell.

Ewe Lamb—First, G. W. Parnell; second, G. W. Parnell; third, A. W. Arnold.

Get of Sire—First, G. W. Parnell; second, A. W. Arnold.

Flock—G. W. Parnell.

Champion Pure Bred Ram, Any Age—G. W. Parnell.

Champion Pure Bred Ewe, Any Age—G. W. Parnell.

POULTRY DEPARTMENT.

SUPERINTENDENT................H. L. PIKE, Whiting, Iowa.

AMERICANS.

EXHIBITORS.

A. L. Anderson, Indianola, Iowa; Mrs. N. B. Ashby, Des Moines, Iowa; Barker Bros., Indianola, Iowa; Wilbert W. Bond, Des Moines, Iowa; Wib. F. Clements, Agency, Iowa; J. L. Crawford, Winterset, Iowa; R. T. Cameron, Ottumwa, Iowa; John Duff, Winterset, Iowa; John Dwight, Des Moines, Iowa; Dr. H. E. Day, Dumont, Iowa; M. M. Evans, Le Grand, Iowa; Geo. N. Foote, Ames, Iowa; R. J. Gaines, Altoona, Iowa; Chas. Guth, Berwick, Iowa; Hanson Bros. & Co., Dean, Iowa; Weir Hart, West Liberty, Iowa; F. H. Holloway, Lytton, Iowa; Peter Hove, Stanhope, Iowa; F. W. Johnson, Luther, Iowa; R. D. Lancaster, Des Moines, Iowa; E. J. Lown, Jesup, Iowa; Will Michael, Selma, Iowa; M. C. Miller, Des Moines, Iowa; A. W. Nichols, Indianola, Iowa; J. T. Perry, Selma, Iowa; S. H. Page, Waverly, Iowa; W. R. Prewitt, Onawa, Iowa; Pleasant View Poultry Farm, Griswold, Iowa; J. A. Pease, Fort Dodge, Iowa; W. Roll, Avon, Iowa; H. H. Rich, Des Moines, Iowa; E. G. Roberts, Fort Atkinson, Wis.; John D. Reeler, Mason City, Iowa; G. W. Stout, Rose Hill, Iowa; M. L. Seeley, Stuart, Iowa; Anthony Stocker, Des Moines, Iowa; F. V. Stone, Belle Plaine, Iowa; F. W. Stolt, Odebolt, Iowa; Clem Thompson, Hiteman, Iowa; W. B. Wilson, Delta, Iowa; Chas. E. Wayman, Carlisle, Iowa; W. D. Welch, Marathon, Iowa; V. G. Warner, Bloomfield, Iowa.

AWARDS.

JUDGE......................W. S. RUSSELL, Ottumwa, Iowa.

Barred Plymouth Rock Cock—First, E. G. Roberts; second, S. H. Page; third, A. W. Nicholls.

Barred Plymouth Rock Hen—First, G. W. Stout; second and third, S. H. Page; fourth, E. G. Roberts.

Barred Plymouth Rock Cockerel—First, John Dwight; second and tnird, S. H. Page; fourth, E. G. Roberts.

Barred Plymouth Rock Pullet—First, S. H. Page; second and third, A. W. Nicholls; fourth, G. W. Stout.

Buff Plymouth Rock Cock—First, E. G. Roberts; second, Peter Hove.

Buff Plymouth Rock Hen—First and second, H. H. Rich; third, E. G. Roberts; fourth, Peter Hove.

Buff Plymouth Rock Cockerel—First and second, H. H. Rich; third, Peter Hove; fourth, Geo. N. Foote.

Buff Plymouth Rock Pullet—First, second and third, H. H. Rich; fourth, Peter Hove.

White Plymouth Rock Cock—First and second, F. H. Holloway; third, J. T. Perry; fourth, Chas. C. Wayman.

White Plymouth Rock Hen—First, F. H. Holloway; second, Chas. Guth; third, J. T. Perry; fourth, Chas. E. Wayman.

White Plymouth Rock Cockerel—First and second, F. H. Holloway; third, F. V. Stone; fourth, M. L. Seeley.

White Plymouth Rock Pullet—First and second, F. H. Holloway; third, M. L. Seeley; fourth, F. V. Stone.

Partridge Plymouth Rock Cock—First, E. G. Roberts; second, R. J. Gaines.

Partridge Plymouth Rock Hen—First, E. G. Roberts; second, V. G. Warner; third and fourth, R. J. Gaines.

Partridge Plymouth Rock Cockerel—First, E. G. Roberts; second, R. J. Gaines; third, V. G. Warner.

Partridge Plymouth Rock Pullet—First, V. G. Warner; second, E. G. Roberts; third, R. J. Gaines.

Partridge Wyandotte Cock—First, E. J. Lown; second, E. G. Roberts; third, V. G. Warner; fourth, E. J. Lown.

Partridge Wyandotte Hen—First, V. G. Warner; second, third and fourth, E. J. Lown.

Partridge Wyandotte Cockerel—First, V. G. Warner; second, E. G. Roberts; third, F. W. Stolt.

Partridge Wyandotte Pullet—First, F. W. Stolt; second, E. G. Roberts; third, V. G. Warner.

Silver Laced Wyandotte Cock—First, E. G. Roberts; second, F. W. Johnson; third, J. T. Perry.

Silver Laced Wyandotte Hen—First, V. G. Warner; second, A. L. Anderson; third, J. T. Perry; fourth, E. G. Roberts.

Silver Laced Wyandotte Cockerel—First, John Dove; second, A. L. Anderson; third, Will Michael; fourth, E. G. Roberts.

Silver Laced Wyandotte Pullet—First, A. L. Anderson; second, Will Michael; third and fourth, John Dove.

Silver Pencilled Wyandotte Cock—First, V. G. Warner; second, E. G. Roberts.

Silver Pencilled Wyandotte Hen—First, E. G. Roberts; second and third, V. G. Warner.

Golden Wyandotte Cock—First and second—A. L. Anderson; third, E. G. Roberts; fourth, W. D. Welch.

Golden Wyandotte Hen—First, A. L. Anderson; second, E. G. Roberts; third and fourth, W. D. Welch.

Golden Wyandotte Cockerel—First, A. L. Anderson; second and third, W. D. Welch; fourth, E. G. Roberts.

Golden Wyandotte Pullet—First and second, A. L. Anderson; third, W. D. Welch; fourth, E. G. Roberts.

White Wyandotte Cock—First, Clem Thompson; second, E. G. Roberts; third, Anthony Stocker; fourth, Mrs. N. B. Ashby.

White Wyandotte Hen—First and second, Mrs. N. B. Ashby; third, E. G. Roberts; fourth, Clem Thompson.

White Wyandotte Cockerel—First, Mrs. N. B. Ashby; second, Barker Bros; third, E. G. Roberts; fourth, W. W. Bond.

White Wyandotte Pullet—First and third, Mrs. N. B. Ashby; second and fourth, Barker Bros.

Buff Wyandotte Cock—First, V. G. Warner; second, A. L. Anderson; third, E. G. Roberts; fourth, J. A. Pease.

Buff Wyandotte Hen—First, Peter Hove; second, J. A. Pease; third, A. L. Anderson; fourth, J. A. Pease.

Buff Wyandotte Cockerel—First, A. L. Anderson; second and fourth, J. A. Pease; third, F. W. Stolt.

Buff Wyandotte Pullet—First, F. W. Stolt; second, A. L. Anderson; third, E. G. Roberts.

Columbia Wyandotte Hen—First, second and third, J. A. Pease.

Columbia Wyandotte Cockerel—First, M. C. Miller; second, J. A. Pease; third, F. W. Stolt; fourth, E. G. Roberts.

Columbia Wyandotte Pullet—First, J. A. Pease; second, F. W. Stolt; third, E. G. Roberts; fourth, M. C. Miller.

Black Java Cock—First, E. G. Roberts.

Black Java Hen—First, E. G. Roberts.

Black Java Cockerel—First, E. G. Roberts.

Black Java Pullet—First, E. G. Roberts.

S. C. Buff Orpington Cock—First and second, Dr. H. E. Day; third, Dr. H. E. Day; fourth, E. G. Roberts.

S. C. Buff Orpington Hen—First and second, Dr. H. E. Day; third, J. L. Crawford; fourth, W. R. Prewitt.

S. C. Buff Orpington Cockerel—First, second and fourth, Dr. H. E. Day; third, E. G. Roberts.

S. C. Buff Orpington Pullet—First, J. L. Crawford; second and third, Dr. H. E. Day; fourth, E. G. Roberts.

S. C. White Orpington Cock—First, M. M. Evans.

S. C. White Orpington Hen—First, A. H. Retsloff; second and third, M. M. Evans.

S. C. White Orpington Cockerel—First, second and fourth, Beatrice Richey; third, W. B. Wilson.

S. C. White Orpington Pullet—First and second, A. H. Retsloff; third and fourth, W. B. Wilson.

R. C. Rhode Island Cock—First and fourth, Pleasantview Poultry Farm; second, E. G. Roberts; third, M. L. Seeley.

R. C. Rhode Island Red Hen—First, E. G. Roberts; second and third, J. D. Reeler; fourth, Hanson Bros. & Co.

R. C. Rhode Island Red Cockerel—First and second, W. F. Clements; third and fourth, Pleasantview Poultry Farm.

R. C. Rhode Island Red Pullet—First and fourth, W. F. Clements; second and third, Pleasantview Poultry Farm.

S. C. Rhode Island Red Cock—First, E. G. Roberts; second, S. H. Page; third, W. Roll; fourth, W. F. Clements.

S. C. Rhode Island Red Hen—First, E. G. Roberts; second, third and fourth, S. H. Page.

S. C. Rhode Island Red Cockerel—First, W. F. Clements; second and third, S. H. Page; fourth, W. F. Clements.

S. C. Rhode Island Red Pullet—First and third, S. H. Page; second, W. F. Clements; fourth, M. C. Miller.

Silver Gray Dorking Cock, Hen, Cockerel and Pullet—First, E. G. Roberts.

ASIATICS.

EXHIBITORS.

R. T. Cameron, Ottumwa, Iowa; Hanson Bros. & Co., Dean, Iowa; F. W. Johnson, Luther, Iowa; Weir Hart, Bondurant, Iowa; R. D. Lancaster, Des Moines, Iowa; L. M. McKay, Des Moines, Iowa; P. R. Osborn, Des Moines, Iowa; E. G. Roberts, Fort Atkinson, Wis.; Will F. Shadle, Belle Plaine, Iowa; R. E. West, Altoona, Iowa; Mrs. Leslie Richardson, Balfour, Iowa; Mrs. E. M. Brinkler, Stuart, Iowa; Miss Lizzie McCleary, Altoona, Iowa.

AWARDS.

Light Brahma Cock—First and third, R. T Cameron; second, E. G. Roberts; fourth, Hanson Bros. & Co.

Light Brahma Hen—First and third, R. T. Cameron; second, Mrs. Leslie Richardson; fourth, Hanson Bros. & Co.

Light Brahma Cockerel—First, E. G. Roberts; second, Weir Hart; third, R. T. Cameron.

Light Brahma Pullet—First, Weir Hart; second, E. G. Roberts; third and fourth, L. N. McKay.

Dark Brahma Cock—First, E. G. Roberts; second, R. T. Lancaster.

Dark Brahma Hen—First, R. D. Lancaster; second, E. G. Roberts.

Buff Cochin Cock—First, E. G. Roberts; second, F. W. Johnson.

Buff Cochin Hen—First, E. G. Roberts.

Buff Cochin Cockerel—First, second and third, F. W. Johnson; fourth, E. G. Roberts.

Buff Cochin Pullet—First, F. W. Johnson; second, E. G. Roberts.

Partridge Cochin Cock—First, E. G. Roberts.

Partridge Cochin Hen—First, E. G. Roberts.

Partridge Cochin Cockerel—First, Mrs. E. M. Brinkler; second, E. G. Roberts; third and fourth, P. R. Osborn.

Partridge Cochin Pullet—First, Mrs. E. M. Brinkler; second, E. G. Roberts.

Black Langshan Cock—First, R. E. West; second, W. F. Shadle; third, E. G. Roberts; fourth, Hanson Bros. & Co.

Black Langshan Hen—First, E. G. Roberts; second, R. E. West.

Black Langshan Cockerel—First and fourth, Miss Lizzie McCleary; second, R. E. West; third, E. G. Roberts.

Black Langshan Pullet—First, E. G. Roberts; second, third and fourth, Miss Lizzie McCleary.

MEDITERRANEANS.

EXHIBITORS.

Barker Bros., Indianola, Iowa; W. O. Coon, Des Moines, Iowa; John Dwight, Des Moines, Iowa; F. M. Finkbine, Des Moines, Iowa; Edmond P. Hanson, Dean, Iowa; Hanson Bros. & Co., Dean, Iowa; Peter S. Hurt, Thorntown, Ind.; F. W. Johnson, Luther, Iowa; Will Michael, Selma, Iowa; P. W. Pitt, Belle Plaine, Iowa; Mrs. S. P. Rogers, Pleasanton, Iowa; E. G. Roberts, Fort Atkinson, Wis.; John D. Reeler, Mason City, Iowa; Clem Thompson, Hiteman, Iowa.

AWARDS.

S. C. Brown Leghorn Cock—First, E. G. Roberts; second and third, F. W. Johnson; fourth, W. O. Coon.

S. C. Brown Leghorn Hen—First, E. G. Roberts; second and third, Clem Thompson; fourth, W. O. Coon.

S. C. Brown Leghorn Cockerel—First, T. W. Pitt; second, E. G. Roberts; third, Will Michael; fourth, W. O. Coon.

S. C. Brown Leghorn Pullet—First, E. G. Roberts; second, Will Michael; third, T. W. Pitt; fourth, W. O. Coon.

R. C. Brown Leghorn Cock—First, E. G. Roberts.

R. C. Brown Leghorn Hen—First, E. G. Roberts; second, Will Michael.

R. C. Brown Leghorn Cockerel—First,, E. G. Roberts; second, Will Michael.

R. C. Brown Leghorn Pullet—First, Will Michael; second, E. G. Roberts.

S. C. White Leghorn Cock—First, E. G. Roberts.

S. C. White Leghorn Hen—First, E. G. Roberts; second, Barker Bros; third, F. W. Johnson; fourth, F. M. Finkbine.

S. C. White Leghorn Cockerel—First, E. G. Roberts; second, Barker Bros.; third, John Dwight; fourth, F. M. Finkbine.

S. C. White Leghorn Pullet—First and second, E. G. Roberts; third, F. W. Johnson; fourth, Barker Bros.

R. C. White Leghorn Cock—First, E. G. Roberts; second, J. D. Reeler; third, Mrs. S. P. Rogers.

R. C. White Leghorn Hen—First and second, Mrs. S. P. Rogers; third, E. G. Roberts; fourth, J. D. Reeler.

R. C. White Leghorn Cockerel—First, J. D. Reeler; second, Mrs. S. P. Rogers; third, E. G. Roberts.

R. C. White Leghorn Pullet—First, J. D. Reeler; second, Mrs. S. P. Rogers; third, E. G. Roberts.

Buff Leghorn Cock—First and third, E. G. Roberts; second, P. S. Hurt.

Buff Leghorn Hen—First and second, P. S. Hurt; third and fourth, E. G. Roberts.

Buff Leghorn Cockerel—First, P. S. Hurt; second, E. G. Roberts; third, E. P. Hanson; fourth, Hanson Bros. & Co.

Buff Leghorn Pullet—First and second, P. S. Hurt; third, E. G. Roberts; fourth, E. P. Hanson.

Black Minorca Cock—First and second, E. G. Roberts.

Black Minorca Hen—First and second, E. G. Roberts.

Black Minorca Cockerel—First and third, E. G. Roberts; second, Barker Bros.

Black Minorca Pullet—First and second, E. G. Roberts.

White Faced Spanish Cock—First, E. G. Roberts.

White Faced Spanish Hen—First, E. G. Roberts.

White Faced Spanish Cockerel—First, E. G. Roberts.
White Faced Spanish Pullet—First, E. G. Roberts.
Blue Andalusian Cock—First, E. G. Roberts.
Blue Andalusian Hen—First, E. G. Roberts.
Blue Andalusian Cockerel—First, E. G. Roberts.
Blue Andalusian Pullet—First, E. G. Roberts.

POLISH.

EXHIBITORS.

E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

W. C. B. Polish Cock—First and second, E. G. Roberts.
W. C. B. Polish Hen—First and second, E. G. Roberts.
W. C. B. Polish Cockerel—First, E. G. Roberts.
W. C. B. Pullet—First and second, E. G. Roberts.
Golden Polish G. or P. Cock—First and second, E. G. Roberts.
Golden Polish G. or P. Hen—First and second, E. G. Roberts.
Golden Polish G. or P. Cockerel—First and second, E. G. Roberts.
Golden Polish B. or P. Pullet—First and second, E. G. Roberts.
Silver Polish B. or P. Cock—First and second, E. G. Roberts.
Silver Polish B. or P. Hen—First and second, E. G. Roberts.
Silver Polish B. or P. Cockerel—First and second, E. G. Roberts.
Silver Polish B. or P. Pullet—First and second, E. G. Roberts.

HAMBURGS.

EXHIBITORS.

L. Cook, Morning Sun, Iowa; E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

Single Spangled Hamburg Cock—First, E. G. Roberts; second, L. Cook.
Silver Spangled Hamburg Hen—First, E. G. Roberts; second and third, L. Cook.
Silver Spangled Hamburg Cockerel—First and second, L. Cook.
Silver Spangled Hamburg Pullet—First, L. Cook.
G. S. Hamburg Cock—First, E. G. Roberts.
G. S. Hamburg Hen—First, E. G. Roberts.
G. S. Hamburg Cockerel—First and second, E. G. Roberts.
G. S. Hamburg Pullet—First and second, E. G. Roberts.
White Hamburg Cock—First, E. G. Roberts.
White Hamburg Hen—First, E. G. Roberts.
White Hamburg Cockerel—First, E. G. Roberts.
White Hamburg Pullet—First, E. G. Roberts.
Black Hamburg Cock—First, E. G. Roberts.
Black Hamburg Hen—First, E. G. Roberts.
Black Hamburg Cockerel—First, E. G. Roberts.
Black Hamburg Pullet—First, E. G. Roberts.

FRENCH.

EXHIBITORS.

E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

Houdon Cock—First, E. G. Roberts.
Houdon Hen—First, E. G. Roberts.
Houdon Cockerel—First, E. G. Roberts.
Houdan Pullet—First, E. G. Roberts.

GAMES.

EXHIBITORS.

E. G. Roberts, Fort Atkinson, Wisconsin.

AWARDS.

Cornish Indian Game Cock—First, E. G. Roberts.
Cornish Indian Game Hen—First, E. G. Roberts.
Cornish Indian Game Cockerel—First, E. G. Roberts.
Cornish Indian Game Pullet—First, E. G. Roberts.
B. B. Red Game Cock—First, E. G. Roberts.
B. B. Red Game Hen—First, E. G. Roberts.
Golden Duckwing Game Hen—First, E. G. Roberts.
Golden Duckwing Game Cockerel—First, E. G. Roberts.

BANTAMS.

EXHIBITORS.

Will Michael, Selma, Iowa; P. R. Osborn, Maxwell, Iowa; E. G. Roberts, Fort Atkinson, Wis.; R. E. West, Altoona, Iowa; V. G. Warner, Bloomfield, Iowa.

AWARDS.

B. B. Red Game Bantam Cock—First and sceond, E. G. Roberts.
B. B. Red Game Bantam Hen—First and second, E. G. Roberts.
B. B. Red Game Bantam Cockerel—First and second, E. G. Roberts.
B. B. Red Game Bantam Pullet—First and second, E. G. Roberts.
Red Pyle Bantam Cock—First and second, E. G. Roberts.
Red Pyle Bantam Hen—First and second, E. G. Roberts.
Red Pyle Bantam Cockerel—First and second, E. G. Roberts.
Red Pyle Bantam Pullet—First, E. G. Roberts.
Silver Duckwing Bantam Cock—First, E. G. Roberts.
Silver Duckwing Bantam Hen—First and second, E. G. Roberts.
Silver Duckwing Bantam Cockerel—First E. G. Roberts.
Silver Duckwing Pullet—First, E. G. Roberts.
Golden Duckwing Bantam Cock—First, E. G. Roberts.

Golden Duckwing Bantam Hen—First, E. G. Roberts.

Golden Duckwing Bantam Cockerel—First, E. G. Roberts.

Golden Duckwing Bantam Pullet—First, E. G. Roberts.

Golden Seabright Bantam Cock—First, E. G. Roberts.

Golden Seabright Bantam Hen—First, E. G. Roberts.

Golden Seabright Bantam Cockerel—First, E. G. Roberts.

Golden Seabright Bantam Pullet—First, E. G. Roberts.

Silver Seabright Bantam Cock—First, E. G. Roberts.

Silver Seabright Bantam Hen—First, E. G. Roberts.

Silver Seabright Bantam Cockerel—First, E. G. Roberts.

Silver Seabright Bantam Pullet—First, E. G. Roberts.

Buff Cochin Bantam Cock—First, E. G. Roberts; second, V. G. Warner; third, Will Michael; fourth, P. R. Osborne.

Buff Cochin Bantam Hen—First, E. G. Roberts; second, R. E. West; third, V. G. Warner; fourth, Will Michael.

Buff Cochin Bantam Cockerel—First, E. G. Roberts; second and third, P. R. Osborne; fourth, R. E. West.

Buff Cochin Bantam Pullet—First, E. G. Roberts; second, Will Michael; third and fourth, R. E. West.

B. T. Japanese Cock—First, E. G. Roberts.

B. T. Japanese Hen—First, E. G. Roberts.

B. T. Japanese Cockerel—First, E. G. Roberts.

B. T. Japanese Pullet—First, E. G. Roberts.

TURKEYS.

EXHIBITORS.

Hanson Bros. & Co., Dean, Iowa; E. G. Roberts, Fort Atkinson, Wis.; Harry H. Wheeler, Elburn, Ill.

AWARDS.

Narragansett Old Gobbler—First, E. G. Roberts.

Narragansett Hen—First, E. G. Roberts.

Bronze Old Gobbler—First, V. G. Warner.

Bronze Old Hen—First and second, V. G. Warner.

Bronze Young Gobbler—First, V. G. Warner.

Bronze Young Hen—First, V. G. Warner.

White Holland Old Gobbler—First, E. G. Roberts; second, Hanson Bros. & Co.

White Holland Old Hen—First, E. G. Roberts; second and fourth, V. G. Warner; third, Hanson Bros. & Co.

White Holland Young Gobbler—First and second, V. G. Warner.

GEESE.

EXHIBITORS.

Carrie B. Farmer, Indianola, Iowa; Hanson Bros. & Co., Dean Iowa; E. G. Roberts, Fort Atkinson, Wis.

AWARDS.

Toulouse Old Gander—First, E. G. Roberts; second, Hanson Bros. & Co.

Toulouse Old Goose—First, E. G. Roberts.

Toulouse Young Gander—First, E. G. Roberts.

Toulouse Young Goose—First, E. G. Roberts.

Embden Gander Old—First, E. G. Roberts; Second, Carrie B. Farmer.

Embden Gander Young—First, Carrie B. Farmer.

Embden Goose Old—First, E. G. Roberts; second, Carrie B. Farmer.

Embden Goose Young—First, Carrie B. Farmer.

DUCKS.

EXHIBITORS.

Carrie B. Farmer, Indianola, Iowa; Hanson Bros. & Co., Dean, Iowa; E. G. Roberts, Fort Atkinson, Wis.; Clem Thompson, Hiteman, Iowa; V. G. Warner, Bloomfield, Iowa.

AWARDS.

Aylesbury Drake Old—First, E. G. Roberts.

Aylesbury Drake Young—First, E. G. Roberts.

Aylesbury Duck Old—First, E. G. Roberts.

Aylesbury Duck Young—First, E. G. Roberts.

Pekin Drake Old—First and second, V. G. Warner; third, E. G. Roberts; fourth, Clem Thompson.

Pekin Drake Young—First, V. G. Warner; second, E. G. Roberts.

Pekin Duck Old—First and second, V. G. Warner; third, E. G. Roberts; fourth, Clem Thompson.

Pekin Duck Young—First, V. G. Warner.

Rouen Drake Old—First, E. G. Roberts; second, Hanson Bros. & Co.

Rouen Duck Old—First, E. G. Roberts; second, Hanson Bros. & Co.

Rouen Drake Young—First, E. G. Roberts; second, Hanson Bros. & Co.

Rouen Duck Young—First, E. G. Roberts.

White Muscovey Drake Old—First, E. G. Roberts.

White Muscovey Drake Young—First, E. C. Roberts.

White Muscovey Duck Old—First, E. G. Roberts.

White Muscovey Duck Young—First, E. G. Roberts.

Colored Muscovey Drake Old—First, E. G. Roberts.

Colored Muscovey Drake Young—First, E. G. Roberts.

Colored Muscovey Duck Old—First, E. G. Roberts.

Colored Muscovey Duck Young—First, E. G. Roberts.

BREEDING PENS.

AWARDS.

Barred Plymouth Rock Fowls—First, S. H. Page; second, G. W. Stout; third, E. G. Roberts.

Barred Plymouth Rock Chicks—First, S. H. Page; second, G. W. Stout; third, W. B. Wilson; fourth, J. S. Shannon.

Buff Plymouth Rock Fowls—First and second, H. H. Rich; third, Peter Hove.

Buff Plymouth Rock Chicks—First and second, H. H. Rich; third, Peter Hove.

White Plymouth Rock Fowls—First, F. H. Holloway; second, Chas. E. Wayman; third, J. T. Perry; fourth F. H. Holloway.

White Plymouth Rock Chicks—First and second, F. H. Holloway; third, Chas. Guth; fourth, F. V. Stone.

Silver Wyandotte Fowls—First, V. G. Warner.

Silver Wyandotte Chicks—First, John Dove; second, A. L. Anderson; third, V. G. Warner.

Golden Wyandotte Fowls—First, V. G. Warner.

Golden Wyandotte Chicks—First, V. G. Warner.

White Wyandotte Fowls—First and third, Mrs. N. B. Ashby; second, W. W. Bond.

White Wyandotte Chicks—First and second, Mrs. N. B. Ashby; third, W. W. Bond; fourth, Anthony Stocker.

Buff Wyandotte Fowls—First, V. G. Warner; second, J. A. Pease; third, A. L. Anderson.

Buff Wyandotte Chicks—First, J. A. Pease; second, A. L. Anderson; third, V. G. Warner; fourth, F. W. Stolt.

Columbia Wyandotte Chicks—First, J. A. Pease; second, Ella Randolph.

Partridge Wyandotte Fowls—First, V. G. Warner.

Partridge Wyandotte Chicks—First, Ella Randolph; second, V. G. Warner.

R. C. Rhode Island Red Fowls—First and second, Pleasantview Poultry Farm.

R. C. Rhode Island Red Chicks—First, W. F. Clements; second and third, Pleasantview Poultry Farm.

S. C. Rhode Island Red Chicks—First and third, W. F. Clements; second, R. D. Graham.

Light Brahma Fowls—First, R. T. Cameron; second, E. G. Roberts.

Light Brahma Chicks—First, Weir Hart; second, R. T. Cameron.

Buff Cochin Chicks—First, F. W. Johnson.

Partridge Cochin Fowls—First, Mrs. E. N. Brinkler.

Partridge Cochin Chicks—First, E. G. Roberts; second, Mrs. E. M. Brinkler; third, P. R. Osborne.

Buff Orpington Fowls—First, second and third, Dr. H. E. Day; fourth, W. R. Prewitt.

Buff Orpington Chicks—First and fourth, Dr. H. E. Day; second, Hanson Bros. & Co.; third, J. L. Crawford.

Black Langshan Fowls—First, E. G. Roberts; second and third, R. E. West; fourth, Hanson Bros. & Co.

Black Langshan Chicks—First and second, R. E. West.

S. C. White Leghorn Fowls—First, E. G. Roberts; second, Barker Bros.

S. C. White Leghorn Chicks—First, F. W. Johnson; second, Anthony Stocker; third, F. M. Finkbine.

R. C. White Leghorn Fowls—First, Mrs. S. P. Rogers; second, J. D. Reeler.

R. C. White Leghorn Chicks—First, J. D. Reeler; second, Mrs. S. P. Rogers.

Silver Crest Brown Leghorn Fowls—First, W. Patterson; second, E. G. Roberts; third, W. O. Coon; fourth, F. W. Johnson.

Silver Crest Brown Leghorn Chicks—First, T. W. Pitt; second, W. O. Coon; third, W. Patterson.

Black Minorca Chicks—First, Barker Bros.

Silver Spangled Hamburg Fowls—First, L. Cook.

Silver Spangled Hamburg Chicks—First, L. Cook; second, E. P. Farmer.

Golden Seabright Bantam Fowls—First, E. G. Roberts.

Buff Cochin Bantam Fowls—First, E. G. Roberts; second, Dow Carpenter.

Buff Cochin Bantam Chicks—First, P. R. Osborne; second, N. C. Miller.

Pair Homing Pigeons—First and second, W. F. Clements; third, C. C. Bartlett.

AWARDS – WINTER CORN SHOW

IN CONNECTION WITH

State Farmers' Institute and Agricultural Convention,

DES MOINES, IOWA, DECEMBER 8-9, 1908.

NORTHERN DISTRICT:

Division No. 1—Ten Ears Yellow Corn—$10; $8; $6; $4; $2.

First, Geo. M. Allee, Newell; second, J. W. Eral, Pocahontas; third, H. L. Felter, Washta; fourth, Miller S. Nelson, Goldfield; fifth, J. J. Allee, Newell.

Division No. 2—One Ear Yellow Corn—$6; $5; $4; $3; $2.

First, J. J. Allee, Newell; second, H. L. Felter, Washta; third, J. J. Allee, Newell; fourth, Marquis Madison, Goldfield; fifth, J. W. Eral, Pocahontas.

Division No. 3—Ten Ears White Corn—$10; $8; $6; $4.

First, Henry George, West Union; second, Geo. M. Allee, Newell; third, A. J. Doore, Greene; fourth, E. R. Mawdsley, Burt.

Division No. 4—One Ear White Corn—$6; $5; $4; $3.

First, Geo. M. Allee, Newell; second, J. J. Allee, Newell; third, E. R. Mawdsley, Burt; fourth, Henry George, West Union.

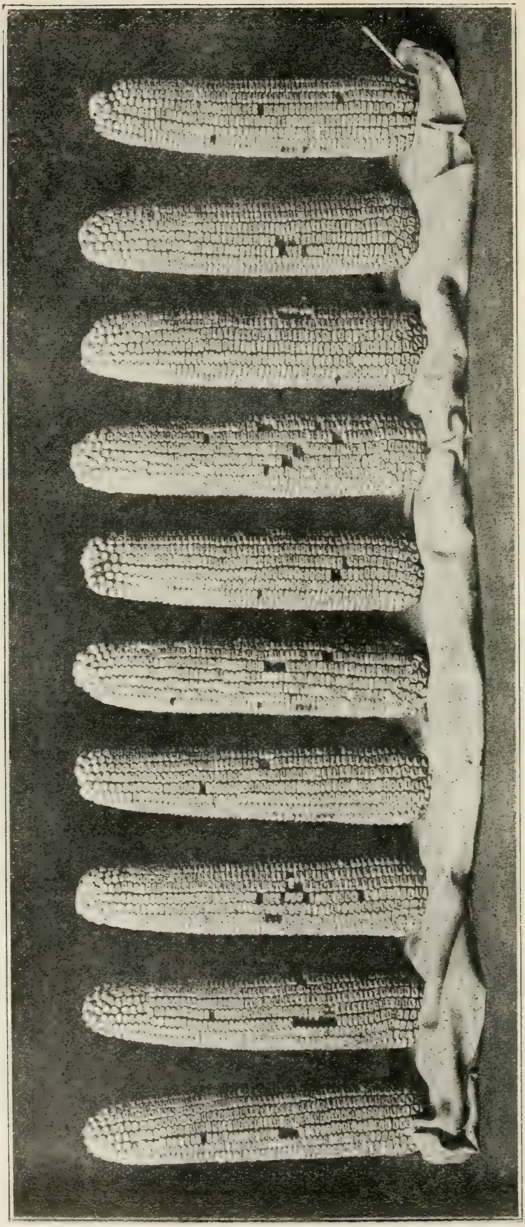
CENTRL DISTRICT:

Division No. 5—Ten Ears Yellow Corn—$10; $8; $6; $4; $4; $2; $2; $2; $2; $2.

First, D. W. Wilson, Panora; second, J. W. Coverdale, Elwood; third, O. Osborn, Maxwell; fourth, Fred Hethershaw, Des Moines; fifth, A. L. Garrett, Mitchellville; sixth, E. M. Wilson, Panora; seventh, C. R. Bishop, Altoona; eighth, Ed Ballou, Panora; ninth, J. C. Freel, Mitchellville; tenth, Chas. O. Garrett, Mitchellville.

Division No. 6—Single Ear Yellow Corn—$6; $5; $4; $4; $2; $2.

First, C. R. Bishop, Altoona; second, E. L. Pearson, Mitchellville; third, Frank Justice, Berwick; fourth, O. Osborn, Maxwell; fifth, H. V. Hethershaw, Des Moines; sixth, Neal Bros., Mt. Vernon.



Sweepstakes Ten Ears of Corn, Winter Corn Show, Dec. 1908.

Division No. 7—Ten Ears White Corn—$10; $8; $6; $4; $2; $2.

First, Perry Livingood, Castana; second, Fred Hethershaw, Des Moines; third, W. M. Dunn, Bondurant; fourth, Ed. Chaloupka, Yale; Fifth, N. J. Harris, Des Moines; sixth, Chas. O. Garrett, Mitchellville.

Division No. 8—Single Ear White Corn—$6; $5; $4; $3; $2.

First, Leon Harris, Des Moines; second, N. J. Harris, Des Moines; third, Ed Chaloupka, Yale; fourth, Chas. O. Garrett, Mitchellville; fifth, Fred Hethershaw, Des Moines.

SOUTHERN DISTRICT:

Division No. 9—Ten Ears Yellow Corn—$10; $8; $6; $4; $2; $2.

First, U. S. Chacey, Hedrick; second, J. A. Mason, Carlisle; third, W. E. Shakespeare, Lamoni; fourth, J. F. C. Finnell, Hamburg; fifth, Thurman Ward, Knoxville; sixth, L. W. Roe, Oskaloosa.

Division No. 10—Single Ear Yellow Corn—$6; $5; $4; $3; $2; $2.

First, U. S. Chacey, Hedrick; second, J. L. Crawford, Winterset; third, J. F. C. Finnell, Hamburg; fourth, J. C. Frame, Lockridge; fifth, Walter Plows, Chariton; sixth, Thurman Ward, Knoxville.

Division No. 11—Ten Ears White Corn—$10; $8; $6; $4; $2.

First, L. W. Roe, Oskaloosa; second, T. B. White, Oskaloosa; third, J. F. C. Finnell, Hamburg; fourth, W. A. Hook, Packwood; fifth, Thos. Thompson, Villisca.

Division 12—Single Ear White Corn—$6; $5; $4; $3.

First, J. C. Frame, Lockridge; second, J. F. C. Finnell, Hamburg; third, Thos. Thompson, Villisca; fourth, U. S. Chacey, Hedrick.

SWEEPSTAKES FOR STATE:

Ten Ears Yellow Corn—$5. D. G. Wilson, Panora.
Single Ear Yellow Corn—$5. U. S. Chacey, Hedrick.
Ten Ears White Corn—$5. L. W. Roe, Oskaloosa.
Single Ear White Corn—$5. Leon Harris, Des Moines.

GRAND SWEEPSTAKES:

Best Ten Ears any Variety—Gold Medal—D. G. Wilson, Panora.
Best Single Ear any Variety—Gold Medal—U. S. Chacey, Hedrick.

COMMERCIAL CLUB CORN TROPHY:

Best Ten Ears any Variety—D. G. Wilson, Panora.

SCORING IN BOYS' LIVE STOCK AND CORN JUDGING CONTEST, IOWA STATE FAIR, 1908, FOR IOWA STATE COLLEGE SCHOLARSHIP.

Rank	Names	Address	Names of Classes						Corn			
			Short Horns 100	Angus 100	Belgian 100	Standard Bred 100	Duroc Jersey 100	Poland China 100	Yellow 100	White 100	Best Ear 15	Totals
1	Ryburn A. Rutledge	Fort Dodge	56	74	70	72	70	55	37	62	----	496
2	Morton O. Cooper	Knierim	80	71	70	50	75	65	13	59	----	483
3	I. C. Kinzer	Bangor	82	71	42	34	58	46	39	72	----	474
4	Frank Sanders	Hartley	58	57	64	68	52	65	42	63	----	472
5	Harley Walker	Swan	75	57	61	31	72	57	49	50	----	452
6	Carlos V. Hill	Montezuma	51	59	63	33	56	53	57	79	----	451
7	Harral A. Longworth	Polk City	72	58	61	63	63	54	26	48	----	445
8	Carl E. Phillips	Centerville	50	56	63	55	67	71	52	30	----	444
9	Albert Ruess	West Liberty	64	49	72	38	57	69	40	49	----	438
10	Herman Steen	West Liberty	69	48	52	44	63	60	60	40	----	436
11	Albert Bakehouse	Sigourney	57	57	28	63	61	48	59	45	10	430
12	Chas. Connelly	West Liberty	64	70	48	37	71	72	35	31	----	428
13	Henry Hasbrouck	Humeston	47	56	63	53	53	68	55	31	----	426
14	Orville Ufford	Ames	62	57	45	57	68	66	33	35	----	423
15	Ray Darbyshire	Shannon City	65	72	51	32	56	74	31	38	----	419
16	Ray Gatewood	Packwood	46	58	64	25	70	62	42	46	----	413
17	Harry W. Hall	West Liberty	57	70	47	70	53	68	5	40	----	410
18	Ryle S. McKee	Indianola	52	75	51	48	62	45	26	44	----	403
19	Jno. B. Slocum, Jr.	Minden	68	34	67	47	70	62	25	29	----	402
20	Edmund P. Hanson	Dean	61	59	44	30	52	48	33	74	----	401
21	Tom Thornburg, Jr.	Linden	60	61	39	48	52	66	42	41	----	400
22	Wm. H. Arnold	Strawberry Pt.	55	70	67	27	53	39	35	38	15	399
23	Harry Wilson	Malvern	52	76	26	54	56	47	52	31	5	399
24	Floyd Schriver	Rockwell City	36	48	64	36	72	63	35	40	----	394
25	Floyd G. Hodsdon	Clarksville	60	58	46	47	56	49	35	40	----	391
26	Harold Nichols	West Liberty	56	58	38	67	64	64	12	23	----	382
27	Lloyd Eveland	Jamaica	66	57	38	26	50	54	49	41	----	381
28	Geo. C. Mauss	Belmond	49	56	65	39	65	62	23	16	----	375
29	Lee Hays	Hamlin	64	54	48	26	63	42	39	37	----	373
30	Harvey Beedle	Ames	53	48	39	54	54	50	15	30	----	343
31	Geo. E. Storm	Rockwell City	48	56	40	25	63	57	28	20	----	337
32	Wallace R. Conrad	Rockwell City	48	34	40	37	72	61	7	23	----	322
33	Ora J. Brouhard	Colo	39	64	34	37	50	51	23	19	----	317

J. A. McLean,
Superintendent of Contest.

SCORING IN GIRLS' COOKING CONTEST, IOWA STATE FAIR, 1908, FOR IOWA STATE COLLEGE SCHOLARSHIP.

Rank	Name	Address	Finished Product 40	Method 20	Reasons 40	Average 100
1	Ruby Lynch	Ames	34	15	37	86
2	Sheila Hasbrouck	Humeston	37	15	27	79
3	Pansy Edwards	Des Moines	28	14	35	77
4	Louise Wood	Iowa Falls	29	14	25	68

Miss Edith G. Charlton,
Superintendent of Contest.

Wallaces Farmer

Boys' Stock and Corn Judging Class, Iowa State Fair and Exposition, 1908.

PART XII.

Papers on Live Stock, Agricultural and Miscellaneous Topics

FROM

BULLETINS, AGRICULTURAL PRESS

AND

Papers Read Before County Farmers Institutes

A COMPLETE RECORD OF THE FRED McCULLOCH FARM FOR THE YEAR BOOK 1908.

Compiled by the division of Farm management, B. P. I., U. S. Department of Agriculture.

The Iowa Department of Agriculture is under obligations to Mr. Fred McCulloch of Hartwick, Iowa, for placing in their hands the complete records of the operation of his three hundred and twenty acre farm in Iowa County, for the year 1908, for publication in the Iowa Year Book of Agriculture. The preface to these records were kindly furnished by W. A. Peck, Assistant Agriculturist of the U. S. Department of Agriculture, B. P. I.

PREFACE.

The section of farm economics in the United States Department of Agriculture began to make a detailed study of farms in 1907; the object being to provide data—fundamental economic units—for effecting an economic farm organization.

In making a working plan for a farm developing a cropping system, etc., in other words, effecting an economic farm organization, there is a certain adjustment of farm forces, dealing with the size of the farm, values, relative profitableness of crops and live stock, yields, feed requirements of live stock, necessary equipment, available working time for operations, etc., which will produce maximum net returns.

The section of farm economics in the United States Department of Agriculture presumes to so study the individual farm problems as to provide data for bringing together the different parts into an economic whole and to create, as a part of an efficient system of management, a system of financial accounts and supplemental records.

Up to the beginning of these investigations in 1907 only a few attempts had been made to study the business management of farms by detailed methods. Several serious difficulties stood in the way of carrying on investigations of this character; there was no satisfactory method of collecting reliable data which would reduce liability of error to the minimum, the expense was heavy and a long time was required before results could be shown.

The first of these was by far the most serious difficulty. The few attempts that have been made have not developed methods for collecting satisfactorily accurate data, accordingly it became necessary to try out various schemes for collecting desired records. The plan was to solicit the co-operation of a few successful farmers who were desirous of knowing results of their own management, the farmers to send in reports on forms furnished and the department to tabulate or make summaries.

In Iowa Mr. Fred McCulloch, a progressive up-to-date farmer interested in knowing the hows and whys of his failures and successes was the first in that state to enter into this co-operation. His records appear here and form the subject matter of this article. About twenty other farmers in the north middle states entered this co-operative work directly with the United States Department, while in Ohio, thirty-five others entered in joint co-operation with the Ohio Experiment Station and the United States Department. Co-operation with farmers was limited to these few in order to accomplish the primary purpose of perfecting a satisfactory system for collecting reliable data rather than show statistical figures of interest.

Below are sample forms of labor time sheets used by farmers in reporting labor performed on all operations.

Form A. **REGULAR WORKER'S DAILY TIME CHECK.**

U. S. Department of Agriculture
in cooperation with Fred McCulloch.
Day of week: Tues. Date, 5-18 1909

KIND OF WORK (Include implements used, number of loads, etc.)	Field	Man Hours	Horse No.	Horse Hours
4:30—				
5:00— Care Horses,		3-4		
5:30— Milking,		1-2		
6:00— Breakfast,				
6:30—				
7:00—				
7:30—				
8:00— Discing,	A	3 1-2	4	14
8:30—				
9:00—				
9:30—				
10:00—				
10:30—				
11:00— Mowing Weeds in Orchard and Garden,				
11:30—		3		
12:00—				
12:30—				
1:00—				
1:30—				
2:00— Helping Store Machinery,		2		
2:30—				
3:00—				
3:30—				
4:00— Cleaning Barn—Rain,		2		
4:30—				
5:00—				
5:30— Milking,		1		
6:00—				
Supper,				
6:30—				
Feeding Horses,		1-2		
7:00—				
7:30—				
8:00—				

Workman: J. J. McMillan. Total Hours | 13 1-4 14

Remarks: | Report O.K. McC.

Form B.

PROPRIETOR'S OR SUPERINTENDENT'S DAILY LABOR REPORT

U. S. Department of Agriculture
in cooperation with Fred McCulloch.

Day of week: Tues. Date, 5-18 1909

	KIND OF WORK (Include implements used, number of loads, etc.)	Field	Man Hours	Horse	
				No.	Hours
4:30					
5:00 5:30	Care of Cows, Horses and Hogs,		1		
6:00 6:30	Breakfast,				
7:00 7:30 8:00 8:30 9:00 9:30 10:00 10:30	Planting Corn—finished field, Planted 6¼ bu. corn @ $2.00.	A	4 1-4	2	8 1-2
11:00 11:30	Desk Work,		1		
12:00 12:30	Dinner,				
1:00 1:30 2:00 2:30	Storing Machinery,		2		1
3:00 3:30 4:00 4:30	To town—personal, Rain.			1	2
5:00 5:30	Feeding Stock,		1		
6:00 6:30 7:00 7:30	Supper,				
	Totals,				
Give weather and crop conditions, general note, etc.					

(Continued on next page.)

EXTRA LABOR

Kind of Work	Field	Time A. M.		Time P. M.		No. of Men	No. Man Hours	No. of Horses	No. Horse Hours
		Beginning	Ending	Beginning	Ending				
Harrowing	A	7	10			1		4	
Cleaning Hog Pens		10	12			1			
Hauling Manure									
Four loads	B			1	3	1		2	

Wage rate: $1.25 per day, with dinner.

Signed Fred McCulloch.

The above is a sample report of J. J. McMillan, employed as farm workman by Mr. McCulloch. A similar time sheet is made out at close of each day by each regular workman, signed by him and O.'K.'d by proprietor or superintendent. Requires two to five minutes to make out report and is usually done before or just after the evening meal.

The above is a sample report of Mr. McCulloch's labor and that of extra help for ———. The proprietor or superintendent reports the time of extra labor while all regular help make out their own reports.

These labor report forms have been very sucessful in getting accurate data when other forms have failed because they guide the memory and require no mental calculations to determine time spent on different kinds of work.

In addition to the labor records statements of all cash receipts and expenditures, feeds fed to live stock, performance records as milk yields, etc., are reported. At beginning of the year complete inventories are made and sometime during the year farms are surveyed by government experts. Copy of inventory and plat of farm showing field arrangement, acreage, etc., are furnished the farmers.

Monthly statements are sent to the farmers of reports as sent in and at end of year summaries showing results.

While in 1908 the record work was carried on with only a few farmers primarily for developing methods for collecting data, some very interesting records were obtained. Mr. McCulloch has very kindly permitted the publication of his records.

The work planned for 1909 and 1910 contemplates co-operation with a large number of farmers throughout the north middle states. In Iowa some thirty more farmers are desired and it is therefore suggested that those interested may learn further concerning the work and perhaps have opportunity to co-operate by writing the office of Farm Management, Department of Agriculture, at Washington.

W. A. PECK,
Assistant Agriculturist.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., UNITED STATES DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

MAN AND HORSE LABOR.

Month	Workman					Total Man hours	Hours outside	Total farm hours	Av. per day		Cost per hr.	Horses	
	Prop.	No. 1	No. 2	No. 3	Extra				Week day	Suuday		Total	Ay. per day
Jan.	269	270½				539½		539½	9.87	2.65	14.8	183	.90
Feb.	274	285¼				559¼		559¼	10.62	3.50	14.0	191¾	1.50
March	286	321½				607½	9¾	597¾	10.60	5.00	13.0	479	2.23
April	350¼	334¼	247½			932	79	853	12.70	2.66	12.0	1,673	8.04
May	332	343	228¼	12		915¼	8½	906¾	12.32	3.10	12.1	862	4.14
June	299¼	334¾		335½		969½	13¾	955¾	12.00	2.84	11.9	1,308	6.25
July	326½	341½		320¾	182	1,170¾	116	1,054¾	11.88	2.21	12.1	1,364	6.31
Aug.	333½	335		316¾	263	1,248¼	143	1,105¼	11.94	3.53	12.3	1,115¼	5.36
Sept.	317	342		37½	290	986½	201¾	784¾	12.00	3.00	12.0	801	3.90
Oct.	293¼	340¾			66	700	24	676	11.35	2.63	11.7	802½	3.75
Nov.	267¼	310¾			378	956	10	946	10.81	3.72	12.9	1,317½	6.51
Dec.	275	258½		194	19½	747		747	10.23	4.10	15.3	317	1.50
Total	3,623	3,817¾	475¾	1,216½	1,198½	10331½	605¾	9,725¾				10417	
Avg.									11.37	3.2	12.6		4.1

Average yearly cost per hour of horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

SUMMARY.

Field	Crop	Totals			Per Acre	
		Acres	Man hours	Horse hours	Man hours	Horse hours
A	Corn	44.24	1,190½	2,557	26.86	57.85
B–1	Clover hay	20.25	378¼	442½	18.65	21.83
B–2	Timothy seed	16.23	170¼	192¾	10.52	11.88
D–1	Barley	8.52	141½	179½	16.60	21.05
D–2	Wheat	8.46	144	132½	17.02	15.56
D–3	Oats	24.25	427¼	603½	17.60	24.80
E–1	Corn	40.00	1,011½	2,168¾	25.30	54.22
E–2	Potatoes	3.70	130½	248	35.27	67.16
F–1	Alfalfa	8.15	455¾	734	55.93	90.09
F–2	Timothy and Clover seed	28.73	206½	194½	7.21	6.80
G	Timothy and Clover seed	35.20	325¾	366	9.25	10.40
Miscellaneous lands		81.57	385¼	235½	4.72	2.88
	Total field crops	319.3	4,967	8,054½		
	Average per acre				15.56	25.23
Live stock			3,186½	614½		
Harvested crops			769¼	353		
Crops—1909			216¾	459		
Fairs and institutes			586¼	21		
	Total farm		9,725¾	9,502		
Outside labor			605¾	915		
	Total		10,331½	10,417		

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

Crop, Corn. 1908. Field A, 44.24 acres.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Care seed corn	-------------	16¼	------	$ 2.05	.37	-----	.046	
Plowing	-------------	99½	382¼	39.29	2.25	8.64	.888	Gang plow.
Discing	4- 8— 5- 9	77½	310	31.46	1.75	7.	.711	12 discs.
Harrowing	4-22— 5-14	42½	137	14.95	.95	3.10	.338	Spike tooth.
Planting	5- 2— 5-15	35¼	70½	9.38	.79	1.58	.212	
Replanting	6- 6—	3½	------	.44	-----	-----	.01	
Ist cultivation	5-23— 6- 2	93	186	24.74	2.10	4.20	.559	1 row.
2d cultivation	6- 3— 6-10	82⅓	164½	21.88	1.90	3.80	.494	1 row.
3d cultivation	6-13— 6-18	61¼	122½	16.29	1.39	2.78	.368	1 row.
4th cultivation	6-22— 6-26	61¼	123½	16.37	1.39	2.78	.37	1 row.
5th cultivation	6-29— 7- 2	62¾	126½	16.76	1.41	2.82	.379	1 row.
Husking	9-28 12 2	464½	879	120.05	10.50	19.90	2.713	Wagon.•
General expense	-------------	91	55¼	15.33	2.06	1.25	.346	
Total labor cost	-------------	1,190½	2,557	$328.99	26.86	57.85	7.434	
Seed	-------------	------	------	19.50	-----	-----	.44	6½ bu. @ $3.
Machinery cost	-------------	------	------	19.77	-----	-----	.447	
Taxes	-------------	------	------	22.12	-----	-----	.50	
Interest	-------------	------	------	221.50	-----	-----	5.00	
Total	-------------	1,190½	2,557	$311.83	26.86	57.85	13.821	

YIELD.

Total 44.24 acres: 2,820.3 bu. corn @ 50 cents per bushel	$ 1,410.15
Yield per acre, 63.75 bu. corn @ 50 cents per bushel	31.87

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 1,410.15	$ 31.87	$ .50
Cost	611.88	13.82	.217
Profit	$ 798.27	$ 18.05	.283

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE -1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

1908. CROP, CLOVER HAY. FIELD B; 20.25 A.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Mowing	7- 6- 9	27½	55	$ 7.31	1.35	2.70	$ .361	5 ft. mower.
Tedding-Raking	7- 7-11	38	50½	8.32	1.87	2.50	.411	
Storing	7- 8-11	141¾	162½	29.24	6.99	8.02	1.443	Hauled to barn.
Tot'l labor 1st crop		207¼	268	$ 44.87	10.21	13.22	$ 2.215	
Hauling manure	7 16-20	24	39¾	5.80	1.18	1.96	.287	
Labor 2d crop		86½	107	18.39	4.27	5.28	.909	
General expense		44½	27¾	7.54	2.19	1.37	.372	
Special machinery		16	------	2.02	.80	-----	.100	Labor repairs.
Total labor cost		378¼	442½	$ 78.62	18.65	21.83	$ 3.883	
Manure		------	------	21.00	-----	-----	1.030	14 loads @ $1.50.
Seed, (10c lb.)		------	------	17.21	-----	-----	.85	(½) 17 lbs. per A.
Machinery cost		------	------	7.83	-----	-----	.387	
Taxes		------	------	10.13	-----	-----	.500	
Interest		------	------	101.25	-----	-----	5.000	
Total		------	------	$236.04	-----	-----	$11.65	

YIELD.

Total 59. 2 tons @ $9.00 .... $ 532.80
Per acre, 2.92 tons.

SUMMARY.

	Total	Per Acre	Per Ton
Income	$ 532.80	$ 26.28	$ 9.00
Cost	236.04	11.65	4.00
Profit	$ 296.76	$ 14.63	$ 5.00

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

1908. CROP, TIMOTHY SEED. 16.23 ACRES. FIELD B-2.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Cutting	7-28-29	29	82½	$ 9.43	1.78	5.08	$ .580	Grain binder.
Shocking	7-28-30	26½		3.34	1.62		.204	
Threshing	9- 9-10	81¼	90	16.54	5.06	5.55	1.020	
General expense		33½	20¼	5.63	2.06	1.25	.347	
Total labor cost		170¼	192¾	34.94	10.52	11.88	$ 2.151	
Threshing charges				8.63			.532	12 cents per bu.
Seed value				12.50			.770	½ of 5 bu. @ $5 per bu.
Twine				5.80			.357	
Machinery cost				5.70			.351	58 lbs. @ 10c.
Taxes				8.12			.500	
Interest				81.15			5.000	
Total cost				$156.86			$ 9.63	

YIELD.

Timothy and some clover seed, 72 bu. @ $1.50 bu	$ 108.00
Yield per acre, 4. 4 bu. @ $1.50 bu	6.60

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 108.00	$ 6.60	$ 1.50
Cost	156.86	9.66	2.18
Loss	$ 48.86	$ 3.06	$ .68

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

1908. CROP, BARLEY. FIELD D-1, 8.52 ACRES.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Cleaning seed		12½		$ 1.58	1.47		$ .185	
Clearing land		3¾	7	.96	.44	.82	.113	
Discing	4- 6— 4-10	11	44	4.46	1.30	5.19	.527	
Drilling	4- 9— -10	5	14	1.61	.6	1.6	.186	
Harrowing		6	24	2.44	.7	2.8	.285	
Cutting	7-13—	9½	28½	3.20	1.11	3.35	.374	
Shocking	7-13— -14	13¾		1.73	1.61		.203	
General expense		26	17	4.47	3.04	2.01	.523	
Threshing	8-11—	54	45	9.95	6.33	5.28	1.167	
Total labor cost		141½	179½	$ 30.40	16.60	21.05	$ 3.563	
Threshing charges				15.32			1.80	4c bu.
Seed				24.00			2.817	24 bu. @ $1.
Twine				2.70			.317	27 lbs. @ 10c.
Machinery				5.56			.653	
Taxes				4.26			.50	
Interest				42.60			5.00	
Total				$124.84			$14.65	

YIELD.

Total yield, 383 bu. @ 50 cents	$ 191.50
Straw, 8.52 tons @ $1.50	12.78
Yield per acre, 45 bu. @ 50 cents	22.50
Straw, 1 ton @ $1.50	1.50

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 204.28	$ 24.00	$ .533
Cost	124.84	14.65	.326
Profit	$ 79.44	$ 9.35	$ .207

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

1908. CROP, WHEAT. FIELD D-2; 8.46 A.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse honrs	Cost	
Sowing		19	19	$ 3.72	2.25	2.25	$ .44	
Harrowing		14	14	2.74	1.66	1.66	.32	
Cutting	7-25— -27	9½	28½	3.20	1.12	3.37	.38	
Shocking	7-27— -28	16		2.02	1.9		.24	
Threshing	8-14—	59¾	54	11.32	7.06	6.38	1.34	
General expense		25¾	17	4.43	3.04	2.01	.52	
Total labor cost		144	132½	$ 27.43	17.03	15.67	$ 3.24	
Threshing				7.12			.84	
Seed				21.00			2.48	
Machinery				5.50			.65	
Interest				42.30			5.00	
Taxes				4.23			.50	
Total cost				$107.58			$ 12.71	

YIELD.

Total, 178 bu. @ 90 cents bu	$ 160.20
Per acre, 21 bushels @ 90 cents bu	
Straw, 8½ tons @ $1.50 ton	12.25
Total	$ 172.45

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 172.45	$ 20.43	$ .99
Cost	107.58	12.71	.61
Profit	$ 64.87	$ 7.72	$ .38

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE -1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, OATS. FIELD D-3, 24.25 A.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Clearing land	4- 3— 4- 7	10½	19½	$ 2.70	.44	.82	$ .113	
Cleaning seed, etc.	------------	26	------	3.28	1.07	-----	.135	
Discing	4- 6— 4- 9	31½	126	12.79	1.30	5.19	.527	
Sowing	4- 6— 4- 9	32½	115	12.15	1.34	4.74	.501	
Harrowing	4-14— 4-15	14	44	4.84	.58	1.82	.200	
Cutting	7-21— 7-23	38½	114½	12.87	1.59	4.72	.531	
Shocking	7-22— -23	40¼	------	5.07	1.66	-----	.209	
Recapping	8- 4— 8- 6	8	------	1.01	.33	-----	.041	
Threshing	8-14—	152¼	135	28.63	6.28	5.57	1.181	
General expense	------------	73½	49	12.69	3.04	2.01	.523	
Total labor cost	------------	427¼	603½	$ 96.03	17.63	24.87	3.961	
Threshing charges	------------	------	------	31.29	-----	-----	1.290	3 cents bu.
Seed	------------	------	------	72.00	-----	-----	2.970	
Twine	------------	------	------	11.20	-----	-----	.460	112 lbs. @ 10c.
Machinery	------------	------	------	15.83	-----	-----	.653	
Taxes	------------	------	------	12.12	-----	-----	.500	
Interest	------------	------	------	121.25	-----	-----	5.000	
Total cost	------------	------	------	$359.72	-----	-----	$14.834	

YIELD.

Total, 1,043 bu. @ 45 cents	$ 469.35
Yield per acre, 43 bu. @ 45 cents	
Straw, 24¼ tons @ $1.50	36.37
Total	$ 505.72

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 505.72	$ 20.85	$ .48
Cost	359.72	14.83	.34
Profit	$ 146.00	$ 6.02	$ .14

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, CORN. FIELD E, 40 ACRES.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Care seed corn		13¾		$ 1.73	.34		$ .043	
Plowing	4-17— 5- 2	97½	332¾	35.58	2.44	8.32	.888	Gang plow.
Discing	4-17— 5-19	46¼	185	18.78	1.16	4.63	.460	12 discs.
Harrowing	4-17— 5-19	45¾	113	13.67	1.14	2.82	.340	Spike tooth.
Planting	5-15— 5-20	30	60	7.98	.75	1.50	.200	2 row.
Harrowing	5-20— 6- 8	25¾	88	9.46	.67	2.20	.236	Spike tooth.
1st cultivation	6- 3— - 5	78¼	156½	20.82	1.96	3.91	.520	1 row.
2d cultivation	6-10— -12	68¾	137½	18.28	1.72	3.44	.457	1 row.
3d cultivation	6-19— 6-23	57	114	15.16	1.42	2.85	.379	1 row.
4th cultivation	6-23— -29	51¼	102½	13.64	1.28	2.56	.341	1 row.
5th cultivation	7- 2— 7- 6	53	106	14.10	1.32	2.65	.352	1 row.
Husking	10-28—11-16	361¾	723½	97.31	9.04	18.09	2.433	Wagon.
General expense		82½	50	13.90	2.06	1.25	.347	
Total labor cost		1,011½	2,168¾	$280.41	25.30	54.22	$ 7.005	
Seed corn				16.50			.401	5½ bu. @ $3.
Machinery cost				17.88			.447	
Taxes				20.00			.500	
Interest				200.00			5.000	
Total				$534.79			$13.353	

YIELD.

Total, 40 acres, 2,550 bu. @ 50 cents bu	$ 1,275.00
Yield per acre, 63.7 bu. @ 50 cents bu	31.85

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 1,275.00	$ 31.85	$ .50
Cost	534.79	13.35	.21
Profit	$ 740.21	$ 18.50	$ .29

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, POTATOES. FIELD E-2, 3.7 A.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Cutting seed		11¾		$ 1.40	3.20		$ .38	By hand.
Plowing		9	30¾	3.28	2.43	8.31	.886	Gang.
Discing	4-17— 5-19	4¼	17	1.73	1.15	4.57	.468	12 discs.
Harrowing	4-17— 5-19	4	13¼	1.43	1.08	3.58	.386	
Planting	5-20— -22	9	18	2.39	2.43	4.78	.646	Planter.
Harrowing	6- 8—	4½	9	1.20	1.22	2.43	.324	
Cultivating (4)	6- 6— 7-25	23¾	47½	6.27	6.42	12.84	1.700	1 row.
Raking off weeds		7	9	1.51	1.89	2.43	.408	
Digging		49½	99	13.17	13.38	26.76	3.557	
General expense		7¾	4½	1.23	2.06	1.25	.332	
Total labor cost		130½	248	$ 40.03	35.26	66.95	$10.832	
Seed value				37.50			10.140	50 bu. @ 75c.
Machinery cost				1.65			.440	
Taxes				1.85			.500	
Interest				18.50			5.000	
Total cost				$ 93.11			$25.18	

YIELD.

Total, 245 bu. @ 50 cents	$ 122.50
Per acre, 66.2 bu. @ 50 cents.	

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 122.50	$ 33.10	$ .50
Cost	93.11	25.18	.38
Profit	$ 29.39	$ 7.92	$ .12

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, ALFALFA. FIELD F-1, 8.15 ACRES.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cosi	Man hours	Horse hours	Cost	
Labor 1st crop	6-15— 6-17	42½	63½	$ 9.80	5.21	7.79	$ 1.20	
Mowing	7-20— -28	21½	43	5.71	2.63	5.27	.70	
Raking-Tedding		10½	24	3.00	1.28	3.00	.36	
Storing	7-21— -30	119	167½	26.72	14.60	20.55	3.28	
Ttl. labor 2d crop		151	234½	35.43	18.51	28.82	4.34	
Labor 3d crop		48¾	52	9.78	6.00	6.38	1.20	
Hauling manure	5-13—10-19	195¾	372¾	50.74	24.02	45.73	6.22	156 loads.
General expense		17¾	11¼	3.01	2.19	1.37	.37	
Total labor cost		455¾	734	$108.76	55.93	90.09	$ 13.33	
Seed value 16c lb				10.84			1.33	25 lbs. per A. 1-3.
Machinery				3.18			.39	
Taxes				4.07			.50	
Interest				40.75			5.00	
Total				$167.60			$ 20.55	

YIELD.

Total 18 tons @ $12.00	$ 216.00
Per acre, 2.21 tons, @ $12.00	26.52

SUMMARY.

	Total	Per Acre	Per Ton
Income	$ 216.00	$ 26.52	$ 12.00
Cost	167.60	20.55	9.31
Profit	$ 48.40	$ 5.97	$ 2.69

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, TIMOTHY AND CLOVER SEED. FIELD F-2, 28.73 A.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Cutting	7-31— 8- 2	24½	70½	$ 8.02	.85	2.45	$ .280	
Shocking	7-31— 8- 4	34¼	------	4.28	1.20	-----	.147	
Thrashing	9-11—	88½	88	17.31	3.10	3.10	.603	
General expense	------------	59¼	36	10.00	2.06	1.25	.347	
Total labor cost	------------	206½	194½	$ 39.61	7.21	6.80	1.377	
Threshing charge	------------	------	------	17.28	-----	-----	.602	12c per bu.
Seed value	------------	------	------	22.12	-----	-----	.770	
Twine	------------	------	------	6.40	-----	-----	.223	64 lbs. @ 10c.
Machinery cost	------------	------	------	10.08	-----	-----	.351	
Taxes	------------	------	------	14.36	-----	-----	.500	
Interest	------------	------	------	143.65	-----	-----	5.000	
Total	------------	------	------	$253.50	-----	-----	$ 8.823	

YIELD.

Total yield, 144 bu. @ $1.50	$ 216.00
Yield per acre, 5 bu. @ $1.50	7.50

SUMMARY.

	Total	Per Acre	Per bu.
Income	$ 216.00	$ 7.50	$ 1.50
Cost	253.50	8.82	1.76
Loss	$ 37.50	$ 1.32	$ .26

Rate per hour man labor, 12.6 cents
Rate per hour horse labor, 7 cents.

COMPILED BY OFFICE OF FARM MANAGEMENT, B. P. I., U. S. DEPARTMENT OF AGRICULTURE—1908.

(Farm of Fred McCulloch, Hartwick, Iowa.)

CROP, TIMOTHY SEED. FIELD G, 35.20 ACRES.

	Dates	Totals			Per Acre			Remarks Machine used
		Man hours	Horse hours	Cost	Man hours	Horse hours	Cost	
Cutting	8- 2— - 5	48	145	$ 16.20	1.36	4.12	.460	Binder.
Shocking	8- 4— - 6	44¾		5.64	1.27		.160	
Threshing	9-10— -11	160½	177	32.61	4.56	5.03	.927	
General expense		72½	44	12.22	2.06	1.25	.347	
Total labor cost		325¾	366	$ 66.67	9.25	10.40	$ 1.894	
Twine				13.00			.370	130 lbs. @ 10c.
Threshing charge				18.00			.511	12c per bu.
Seed value				30.00			.854	½ of 12 bu. @ $5.
Machinery cost				13.00			.370	
Taxes				17.60			.500	
Interest				176.00			5.000	
Total				$334.27			$ 9.50	

YIELD.

Total yield, 150 bu. @ $1.50	$ 225.00
Yield per acre, 4¼ bu. @ $1.50	6.39

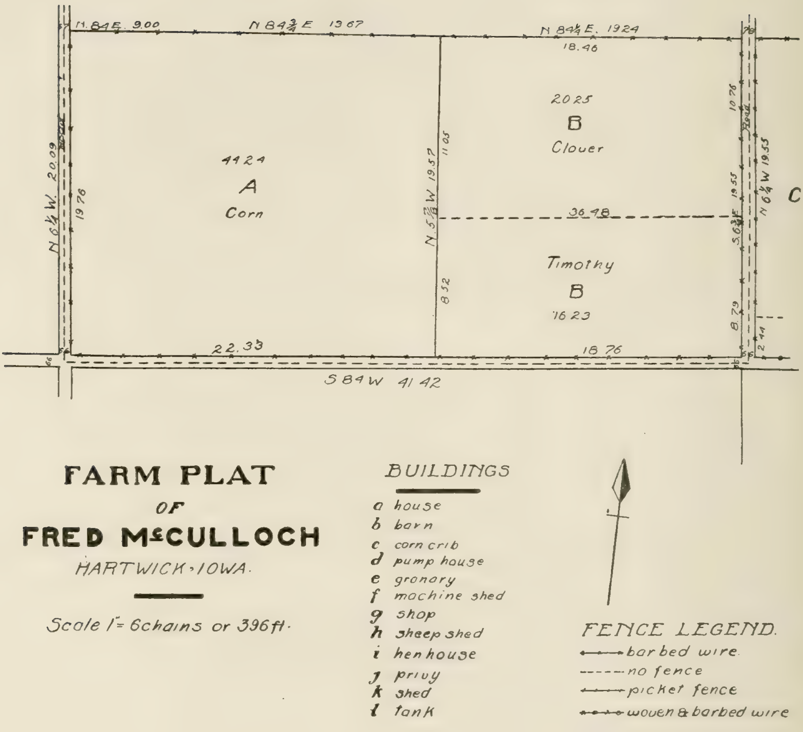
SUMMARY.

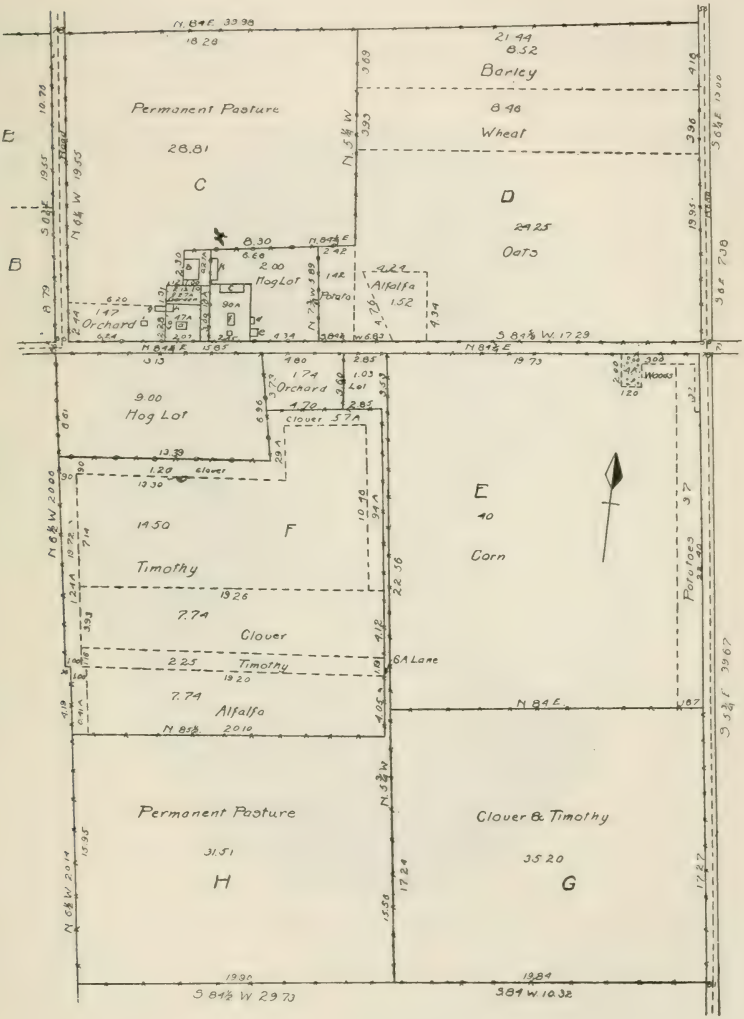
	Total	Per Acre	Per bu.
Income	$ 225.00	$ 6.39	$ 1.50
Cost	334.27	9.50	2.23
Loss	$ 109.27	$ 3.11	$ .73

Rate per hour of man labor, 12.6 cents.
Rate per hour of horse labor, 7 cents.

SUMMARY OF ALL PRODUCTS.

Product	Number acre	Total yield	Yield per acre	Total income	Total cost	Income per acre	Cost per acre	Profit per acre	Loss per acre	Total profit	Total loss	Selling price
Corn	44.24	2,820 bu.	63.75 bu.	$1,410.25	$611.88	$ 31.87	$ 13.82	$ 18.05		$ 798.27		$ .50 per bu.
Clover hay	20.25	59.2 T.	2.92 T.	532.80	236.04	26.28	11.65	14.63		296.76		9.00 per T.
Timothy seed	16.23	72 bu.	4.4 bu.	108.00	156.86	6.60	9.66		$ 3.06		$ 48.86	1.50 per bu.
			Stw. 8.52 T.									
Barley	8.52	383 bu.	45. bu.	204.28	124.84	24.00	14.65	9.35		79.44		.50 per bu.
Wheat	8.46	178 bu.	21. bu.	172.45	107.58	20.43	12.71	7.72		64.87		.90 per bu.
Oats	24.25	1,043 bu.	43. bu.	505.72	359.72	20.85	14.83	6.02		146.00		.48 per bu.
Corn	40.	2,550 bu.	63.7 bu.	1,275.00	534.79	31.85	13.35	18.50		740.21		.50 per bu.
Potatoes	3.7	245 bu.	66.2 bu.	122.50	93.11	33.10	25.18	7.92		29.39		.50 per bu.
Alfalfa	8.15	18 T.	2.2 T.	216.00	167.60	26.52	20.55	5.97		48.40		12.00 per T.
Timothy and clover seed	28.73	144 bu.	5. bu.	216.00	253.50	7.50	8.82		1.32		37.50	1.50 per bu.
Timothy seed	35.20	150 bu.	4.5 bu.	225.00	334.27	6.39	9.50		3.11		109.27	1.50 per bu.


N. 84 E. 9.00
N 84¾ E 13.67
N 84¼ E. 19.24
18.46
N 6¼ W. 20.09
19.76
44.24
A
Corn
N. 5⅞ W 19.57
11.05
8.52
20.25
B
Clover
36.48
Timothy
B
16.23
10.76
19.55
S. 6¾ E
8.79
N 6¼ W 19.55
C
2.44
22.33
18.76
S 84 W 41.42
FARM PLAT
OF
FRED McCULLOCH
HARTWICK, IOWA.
Scale 1" = 6 chains or 396 ft.
BUILDINGS
a house
b barn
c corn crib
d pump house
e granary
f machine shed
g shop
h sheep shed
i hen house
j privy
k shed
l tank
FENCE LEGEND.
barbed wire
no fence
picket fence
woven & barbed wire


N. 84 E. 39.98
18.28
21.44
8.52
Barley
8.46
Wheat
Permanent Pasture
26.81
C
D
29.25
Oats
E
B
10.78
19.55
S 0¾ E
N 6¼ W 19.55
Road
8.79
3.69
3.93
N. 5¼ W
4.18
3.96
S 6¼ E 13.00
19.95
S 6 E 7.30
8.30
6.60
N. 84½ E
2.42
2.00
Hog Lot
1.42
Potato
4.22
Alfalfa
1.52
4.34
6.20
1.47
Orchard
2.44
90A
47A
4.34
S 84½ W. 17.29
N 84¼ E 15.85
N 84¼ E
19.73
3.13
4.80
1.74
Orchard
2.85
1.03
Lot
3.00
4A
Woods
1.20
9.00
Hog Lot
8.61
6.96
4.70
2.85
Clover 5.7A
13.39
29A
1.20 Clover
13.30
14.50
F
Timothy
10.98
94A
N 6¼ W 20.00
19.72
7.14
E
40
Corn
22.56
Potatoes
3.7
19.26
7.74
Clover
4.12
6A Lane
2.25
Timothy
19.20
7.74
Alfalfa
4.19
4.05
N 85½ 20.10
N 84 E.
1.87
S 5¾ E 39.67
N. 5¾ W
Permanent Pasture
31.51
H
15.95
N 6¼ W 20.14
Clover & Timothy
35.20
G
17.24
15.56
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S 84½ W 29.73
19.84
S 84 W. 10.32

FRED McCULLOCH
Hartwick, Iowa

FRED McCULLOCH IN CO-OPERATION WITH UNITED STATES DEPARTMENT OF AGRICULTURE.

FINANCIAL STATEMENT.

Farm inventory January 1, 1908		$46,307.50
Capital invested in land (320 acres) and equipment		37,325.00
Receipts—		
Live stock sales	$3,738.78	
Crop sales	1,841.31	
Inventory increase	1,397.00	
Total receipts	$6,977.09	
Deduct expenses	4,313.14	
Gross gain	$2,663.95	
Deduct proprietor's salary	500.00	
Net gain	$2,163.95	
Deduct five per cent on $37,325.00	1,866.25	
Profit on proprietor's labor	297.70	
Add salary allowed	500.00	
Labor income	$ 797.70	

Gain $2,163.95 equals 4.7 per cent on total investment of $46,307.50, or 5.8 per cent on capital of $37,325.00.

HOW TO GROW OATS.

Paper written for The Quaker Oats Co. Contest.

J. H. BURGY, SOUTH AMANA, IOWA—FIRST PRIZE.

The seed corn agitation that has been carried on the past few years has been a great help towards developing that important cereal, but during this little time was accomplished toward improving our seed oats. When we come to realize that Iowa produces on an average only twenty-nine bushels per acre, we think that this is an opportune time to inaugurate an educational campaign so that the Iowa farmer may "get next" to the fundamental principles in oat growing, thereby enabling our state to boast of an average yield of at least fifty bushels per acre, which could easily be realized if more attention was given to the *selection* and *preparation* of the seed, *properly prepared seed bed* and *time* and *method* of planting.

The *first and most important* item to be considered is the seed, as what we sow that we must expect to reap. To produce a large crop we must have seed that is in its highest state of development; furthermore, it must be thoroughly fanned and properly graded so that none but heavy and uniform kernels remain, after which it should be carefully treated for smut. The old method of taking the seed from the bin direct to the field, without any previous preparation, is the leading cause why such low yields are in evidence. Some advocate obtaining an occasional supply of seed from some cool climate where it reaches its highest development. This is advisable if for any reason our grain shows evidence of running out, as is often the case in our climate.

The preparation of the seed bed is next in importance. Upon investigation we find that most farmers give little or no previous preparation to tne soil before planting. The usual plan that is practiced is to plant the grain, then disc and harrow it in; or, in other words, prepare the seed bed after the planting. Then the farmer will wonder why his stand is streaky and so uneven.

To obtain an *even stand* and *uniformity* in ripening of the grain, we must have a well prepared seed bed previous to planting. In this section oats usually follows a corn rotation. Thereby we have to contend with the stalks, but by the use of a sharp disc little trouble is experienced.

As oats do best on a firm seed bed it is not advisable to make it more than 3 or 3½ inches in depth. This is usually acomplished by discing twice, giving it a half lap, following by double harrowing. This treatment, if properly done, will leave the ground in excellent shape for the disc drill to do first-class work. In sowing the seed, which is the last step, the use of a drill cannot be recommended too highly, as it places the seed in the ground at uniform depth into moist soil, and none is wasted as in broadcasting.

After repeated tests in drilling and sowing broadcast, a difference is found of from four to eight bushels per acre in favor of the former. Sowing or drilling should be commenced as early in the season as conditions permit, as early planted fields usually produce the better quality of oats. Three to three and one-half bushels to the acre of ordinary size seed gives the best results; broadcasting and the large varieties of oats requiring more. It is important that the seed receives an even covering at a depth of from 1½ to 2 inches.

In conclusion we may again state that *too much importance* cannot be attached to seed and its *proper preparation*, as no matter how well we prepare the seed bed, or how we manage the time or method of planting, unless *every kernel* is of the *highest vitality* and is capable of producing a strong and vigorous plant, we cannot expect a bumper crop of oats.

F. D. STEEN, WEST LIBERTY, IOWA—SECOND PRIZE.

Oats are a grass of the cereal family. The grain or seed is edible and furnishes some of the most healthful of human foods. It is also best of feed for horses and other domestic animals. As a farm crop of Iowa oats rank second in money value, being surpassed by corn only.

Oats for seed purposes should be well matured, clean, free from weeds seeds and fungus spores. They should be run through a good fanning mill to take out all small kernels and seeds. To do this a number of cleanings is necessary. Only good-sized, plump kernels should be sown.

They should be of the same variety to secure eveness in ripening. The variety itself depends upon the soil, locality and the purpose for which it is grown.

When the seed has been cleaned and just before sowing it should be treated with a diluted solution of formaldehyde to kill smut and other spores. This can be done by spreading the oats a few inches thick on a floor, sprinkling over it some of the formalin solution, putting on more oats and then more of the solution until all are treated. Next shovel over the heap so that it may be well and evenly mixed. Cover over with blankets till next day to prevent escape of fumes and that every kernel may be brought under the effect of the formalin. Then spread out the oats upon the floor to let dry quickly ready for sowing.

The seed bed for oats should be well prepared before seeding. In Iowa oats are usually sown on cornstalk ground. The stalks should be removed by putting them in silo or shock in the fall, or they should be thoroughly disced, and harrowed down evenly before seeding. This is very important because a great deal depends upon the evenness of depth in planting. This cannot be secured when long cornstalks lie in greater or smaller heaps over the ground, preventing even working of the seed drill. The ground should be worked to a depth of about four inches so that the little roots may readily spread and absorb the plant food from the soil. This stirring of the soil warms it and later on helps it to retain moisture for the use of the plant. On rich land the seed bed should not be made too loose, as oats like the ground well prepared, yet somewhat compacted, which condition is secured by the use of a good smoothing harrow.

The time of planting depends on the season. Oats should be sown early, just as soon as the ground is in condition to work well. Earliness of planting is very important because oats thus sown develop less straw and a larger proportionate amount of grain of better quality than when sown later. Early seeding also helps them to escape hot weather and storms near the end of the ripening season. Very hot weather prevents proper filling of the grain and storms blow down the straw and thus injure the filling and ripening process.

The seed should be put into the ground with a drill to the depth of about two inches. To secure more uniform distribution of the seed, one-half of it may be put in the ground, and then going over the field with the drill at right angles from the first drilling to put in the balance of the seed. This, however, is not so important as to have the seed sown early at an even depth, and that the ground be in first class condition. The even depth of planting is desirable because it secures even germination, even development of the plants, and evenness of ripening.

Oats are ripe when the stalk has turned a golden yellow. They must then be cut without delay. If for any reason they be cut before fully ripe it is well to let the sheaves lie upon the ground a few hours to cure out. But in all cases they should be set up into shocks before night. This prevents bleaching by dew and rain. The shock should always be small, containing about eight sheaves, compactly and regularly placed together, with a capsheaf over the top to run off the rain. If the shock be well put up it is surprising how much storm it will withstand and how well it will preserve the grain.

After a week or ten days, according to the weather, these oats are ready to be stacked. Beginning with the shock place the sheaves around it, buts down and heads up, going around until the bottom is the desired size. Then begin on outside and lay the sheaves around the outside and then another course, lapping over on the preceding one as far as the band, and so on to the center of the stack. Build up till about six feet high, letting the sides project over a little, and by that time have the middle well filled. Now lay two courses at once, making the outside one project over for "eaves" of the stack, laying it in a slanting manner to run off rain. Do not tramp on outside course after this. Draw in each succeeding layer of sheaves a little until stack is finished. Place capsheaves in center of stack as much as possible because they are flat and will pack closer than other sheaves. Rake loose straw from outside of stack in a downward manner. If the stack stands straight after settling it will shed a surprising amount of water. Thresh after sixty days or more, and both straw and grain will be of much better quality than if threshed from the shock.

B. T. SEAMAN, DAVENPORT, IOWA—THIRD PRIZE.

First test the seed for vitality. Place in the bottom of a shallow dish three or four layers of newspapers; spread over this a layer of thin muslin; place a good handful of oats upon this, covering with another layer of muslin, and lastly several layers of newspapers. Fill the plate with water of a temperature of sixty degrees. Allow it to soak three or four hours; then pour off all surplus water and place where it can be kept moderately moist and at a temperature of about seventy degrees.

In about three days by removing the cloth you can determine the exact percentage of grain showing a good healthy sprout. Reject any sample which does not show at least ninety-five per cent of good healthy sprouts.

Being satisfied that your seed will grow, it should be run through the fanning mill at least twice. The first time use sufficient wind to blow out all chaff, hulls and light grain, the second time to screen out all weed seed and small oats, thus procuring seed uniform in size and weight.

Next treat your seed for smut, using formaldehyde treatment. Take one pint of a 40 per cent solution of formaldehyde and dilute with fifty gallons of water (soft water preferred). Spread a three inch layer of oats on the granary floor and sprinkle it thoroughly with your solution. using a spray pump or sprinkling can. Then add another layer of grain and spray again, and so on. The above amount of solution is sufficient for about sixty bushels of seed.

After the seed has all been sprinkled, mix it thoroughly with the shovel, working the pile over six or eight times; then round it up and cover with canvas to prevent the too rapid evaporation of the formaldehyde fumes, which kill the smut germ.

In from ten to twelve hours remove the covering and spread out the grain to dry, accelerating the process by frequent stirring and in damp weather by running through the fanning mill. The seed is ready to sow when dry enough to run through the grain drill, but it may be kept for several days, being careful not to contaminate again with smut.

Oats grow best in a well prepared seed bed of three to four inches in depth on a rather compact foundation. This may be obtained on corn stalk ground, when the stalks are not too heavy, by using first the stalk cutter, then disc or corn plow, then harrow. If the stalks are heavy and the ground weedy, first break, rake and burn the stalks and trash.

It is not advisable to spring plow for oats, except when the land is uneven and poor; but if you do, work down well with disc and harrow.

If sowed on fall plowed land, the plowing should be done early and about four inches deep. This needs no preparation, except harrowing.

Oats should be sowed as early as the ground can be put in good physical condition, but not earlier than the 20th of March, except in unusually forward seasons. Good crops have been raised when sown as late as the third week in April.

The best results are obtained by using a single disc grain drill, set to plant the seed from two to two and one-half inches deep. Good results are also obtained by the broadcast disc seeder. In any case the seed must be evenly distributed and well covered. The weather permitting defer harrowing until the second or third day.

In selecting seed oats choose those which show large, plumpy kernels when the hull is removed. Avoid thick, heavy hulled oats. I prefer white oats.

The amount of seed per acre depends upon time and method of sowing and condition of the soil. When treated seed is sown with a drill, in good land, well prepared, in March or early April, seventy-five pounds per acre is sufficient. Late planting or poor soil requires more seed. In extreme cases as much as one hundred and twenty pounds may be used with profit. Less seed is required when drilled than when sown broadcast.

The three great enemies of oats are smut, rust and heat. Smut can be positively prevented by the formaldehyde treatment. Rust may be lessened by choice of land, early sowing and early varieties of seed.

Oats should not be sown on newly broken land, especially when highly nitrified by the use of clover, or rich in humus through heavy manuring, as the growth will be too luxuriant; the grain apt to lodge and more susceptible to rust. The land can scarcely be too rich in mineral matter.

Avoid sowing oats where the land is sheltered on the west or south as an oat field needs what the orchardist calls "air-drainage."

A temperature of around one-hundred degrees is very injurious to oats at any time after blossoming, which largely accounts for our light crops the last few years. For this reason also we advise early seeding and early varieties. For early varieties I prefer Kershon, Early Champion and Lincoln. For late varieties I prefer White Probstei and Big Four. There are other new varieties which are worthy of trial, but for the main crop select such as are known to give good results in the locality in which they are to be sown. Should the ground become crusted before the oats are three or four inches high break the crust by rolling, light harrowing or by using a Hallock weeder, which gives especially good results on drilled oats.

FRED MC CULLOCH, HARTWICK, IOWA—FOURTH PRIZE.

How to grow oats is one of the great problems to be solved by the Iowa farmer of today. It will not be hard for him to do so if he will only commence this spring and resolve to prepare the seed better and sow nothing but good, heavy, clean seed.

The ground on which the oats are to be sown should be put in the best condition possible; first the stalks should be well broken, then raked and burned, thus giving the disc a better chance. Next give the field two good discings the same way; the first time following the corn rows, and the second time following the ridge made by the disc the first time. This will cut up all the ground in good shape. Now the next thing to do is to give it a good harrowing the opposite way from discing, so it will be level; then go on with a good disc drill, which is the only way to sow small grain on stalk ground. When it is possible to do so it should be drilled north and south, as that will let more light and sunshine to the growing plants.

After the drilling is finished, give the ground a good harrowing. Now you will have a very good seed bed for your oats. Most farmers think if they go out and sow the oats and scratch over the ground a little they will get a crop, and then they wonder why they did not get a large yield.

Oats need a good rich soil, as rich as is required of corn. The old story that the ground is too rich for oats is wrong, the trouble being in not properly working the ground, and having a good seed bed.

The preparing of the seed to be sown is a matter that has received less attention than the properly made seed bed. The greater portion of the oats sown at the present time is done by backing up to the granary with an old end gate seeder, and scooping in the oats, dirt, light oats and all; then going to the field, and see how many acres can be sown in the least possible time, and yet expect a good crop.

Oats must be cleaned and well graded before sowing. The only way to grade is by weight, using plenty of wind, and clean out all the light and pin oats, as nothing but the very plumpest oats should be sown. A large number of farmers do not have such a thing as a fanning mill, and yet expect to raise a big crop by sowing the oats just as they are in the granary. If they expect to increase the yield they must begin to select better oats and grade them by weight, as just screening is not sufficient. Many of the oats will be large double oats, which if carefully examined will be just a hull without a berry in it. These would be blown out if the weight system was used, as nothing but heavy grains can fall against a strong current of air, this giving a uniform grade.

The type of oats best adapted to the locality should be selected, but care should be taken to select oats free from double or pin oats, because these cannot be used by the milling factories to whom a large amount of our oats are sold; they can and will pay more for good oats which they can use than for these others, so nothing should be grown but what shows a very small per cent of double or pin oats.

After the oats are well graded they should be treated for smut, by using the formalin solution, which is one pound of 40 per cent formaldehyde to thirty-five gallons of water; allowing them to thoroughly soak in this to kill all the smut spores. They should now be piled on the floor of the granary in long rows and covered with blankets and allowed to remain in this condition from ten to twelve hours, then spread them out to dry and when thoroughly dry they will be ready for sowing.

Sow the oats as early in the spring as the ground will work up in good condition. This will give them time to ripen before the extreme hot weather in July, which is bad for the late oats. They should be sown thick enough to prevent stooling; a fact which most farmers do not believe in, for they think they should be sown thin so they will stool out well, and this is the very thing they should guard against. It is just as injurious for the oat plant to stool as it is for the corn to sucker, and the farmers know the result in that case.

It is hard to give the exact amount to sow per acre as the varieties vary in size. The medium or late varieties should be sown at the rate of about three bushels per acre, drilled. In case the extra large oats, such as the Garton Seed Oats, are used, they should be sown at the rate of five bushels per acre, and small or early oats less according to size of kernels. Surely if the soil is well prepared, the seed carefully selected, cleaned, graded and treated, the great problem of "How to Grow Oats" will be nearer completion.

WHAT THE SHROPSHIRE SHEEP HAS DONE FOR THE AMERICAN FARMER.

HOWARD A. CHANDLER, CHARITON.

The Shropshire sheep enjoys the distinction of having been the solid rock upon which the foundation was first really begun to make America a mutton producing country. It seems nearly as if Providence has piloted the breed to this country for improving or "opening up" the same as Columbus came first to a country which later grew and improved far beyond their greatest ideas. But it was a country which if left untouched would still have been a wilderness in comparison with what it is today, but a new country was needed by the people of the world and it was discovered. When the Shropshire sheep was first introduced into America there were practically no mutton sheep, but they were needed and they came. There was a place for them, and had they not been introduced the agricultural population of this country would be at a great loss. What the Shropshire has done to the sheep industry is nearly too vast to comprehend. When it is considered how the favorable results which came from the first Shropshire was a stimulant for an expansion of mutton sheep production, it must be granted that the Shropshire is a breed of great merit. They have proved profitable from the very beginning and the present condition of the mutton industry traces to a greater or less extent back to this one breed. Of course, today there are many mutton breeds but they have come along the path previously paved by the Shropshire. It came and made clear the fact that mutton sheep were required. Their strong constitution made them do well under all farm and climatic conditions, their mutton was of such quality that it filled a market requirement which had never before been met, their fleece was of good weight and with special density under the body to protect the sheep when lying on damp ground, and not only did the pure Shropshire fulfill the requirements but they strongly impressed these qualities in their offspring when crossed on other sheep. When people began to learn of this the demand for Shropshire blood increased and has steadily increased ever since. The breed greatly improved the common sheep and made an excellent cross with the fine-wools, and not only did the sheep produced by such crossbreeding meet the requirements but they have broadened the mutton demand into all sections of the country.

First, the Shropshires came to one section and the improvement was not far reaching but it soon began to spread and has continued until the present day. The comparatively limited number of rams available in early years even retarded the improvement that sheepmen wanted to make when it was generally known what advancement mutton sheep were making. As better mutton has been produced from year to year, the demand has not only increased but has steadily changed for the best class. As the country's population has learned that first-class mutton is obtainable, a much greater quantity is being consumed. These facts are especially verified by the great change in market conditions. In days gone by there was not much discrimination when a car of sheep was set to market, but now the price varies exactly according to the quality of sheep being offered. Good ones bring good prices and the undesirable sheep bring that kind of prices. Has the Shropshire not been a main factor in bringing all this about? They proved that Shropshire-cross mutton was good mutton and thousands of people were ready to buy that class of meat. As the sheepmen have learned that was what is required the breeding of Shropshire sheep has expanded, but that expansion has hardly been as great as is the demand. Farmers have been well pleased because the Shropshire flock has taken a place on the general farm that nothing else seems to fill. The fact that the Shropshire is at the present day raised in every state in the union is because they have given results which are sought for by the agricultural population and they have the mutton that is sought for by the meat-eating public. They are the universal sheep because they have "made good" from the beginning. Should not all sheepmen be thankful for this because it has placed the sheep industry of America on a solid foundation and made it a business of stability? Had this breed never been introduced here, what would have been the present condition of the industry? An answer to that question would lead to supposition, but it is safe to say that had the breeders have started with sheep which were not so hardy under all conditions and did not produce such a good mutton carcass when crossed on other breeds, their interest would have been slackened and desire to expand would have been cut off. Also, if the public had not been continually getting a better grade of mutton their demand would have contracted instead of expanding. But the Shropshire pleased the breeder and pleased the consumer, and our country is thankful for such a breed. The great strides forward which have been made are a benefit to all and we do not believe that anyone does not really in their own mind give all due credit to the Shropshire. The greater portion of America must be a mutton producer and none other than a mutton sheep of the highest class fills the bill. The Shropshire has done it, is doing it, and always will. They are the sheep for the farmer and there are good reasons for it; so many that none but those who raise Shropshires can ever really learn them all. Constitution has been a most desirable characteristic and farmers want such a sheep that doesn't need to be kept in a hot-house and that will not suffer if caught out in a storm. Not only are they naturally strong but their dense fleece which completely covers the body is the greatest sort of protection. Probably they are in a class by themselves when it comes to raising twin lambs. Some breeders may say that they would rather have one strong lamb than two weak ones. Yes, but wouldn't you rather have two strong lambs than just one? That is what the well cared for Shropshire ewe will bring. Only a short time ago we saw two Shropshire ewes with seven big lusty lambs on an Ohio farm. Of course, that is an exceptional instance, but the fact that the two ewes gave birth to the seven lambs and were rearing them well only shows one of the breed's strong characteristics. That the quality of Shropshire mutton has been a principal factor in building up the American mutton business speaks strongly enough for itself, and the most desirable feature is that these good qualities come out very distinctly in the offspring when low-quality flocks have had Shropshire blood introduced. That fact has been a boon to American agriculture because the importance of a flock on every farm is getting more and more evident each year and had not the Shropshire given such good all-around results in the past the probabilities are that the sheep industry would shine under a different light than it does today. To a certain point, the more Shropshire blood that has been introduced into the flocks of a community the greater has been the success of those breeders because they have met the demand for first-class mutton, and mutton is what the world is calling for. The demand which the Shropshire breed has created, and the desire of farmers to raise them because they are so profitable, when coupled together is what makes the Shropshire the exceptional breed that it is. Grade sheep producers have learned that it is the breed for them because of the market demand, and purebred breeders achive success because the demand is keen for the Shropshire breeding material they offer for sale.

Facts of conditions show that they are in a class by themselves as a utility sheep for the general farmer and in addition to that they are most beautiful for those who love to have good live stock as well as to have the kind that are a financial success. Therefore, today the solid old Shropshire is to be recommended to those who want a general farm flock that will raise lambs to bring the highest price, and also to those who are engaging in a pure-bred business to derive satisfaction, pleasure, and profit from it. The Shropshire has done well by its breeders and will do even better in the future because it has built up its own foundation that has stood the storms and is not floating on borrowed reputation. It lives on facts, and facts are what count. The future must be judged more or less by the past and that is what makes the Shropshire enjoy its present distinction.

THE FARM AND THE FLOCK.

HOWARD A. CHANDLER, CHARITON, IOWA.

Farmers of today are working under different conditions than did their forefathers, in many instances the soil has been tilled until it is weakened, the population has so rapidly increased that there is keen demand for land and its value has greatly advanced, the world demands higher class products from the farm, and all of the many millions of people must be clothed and fed. The agricultural population realizes more fully than ever before the necessity of restoring strength to worn out farms and also of keeping up even those that are the most productive. Farmers do not desire to repeat past folly of continually raising grain and not returning anything to the soil and they are anxious to learn the best solution of this problem. Land is getting higher and higher in price and not only are owners of deteriorated farms striving to bring theirs up to an average but those who have the most valuable and richest farms want some means of keeping up this high standard and to derive the necessary profit from a large investment. Therefore the main purpose of the farmer is to increase the productive power of the soil and to raise upon that land what will make the largest net returns. As no soil can be continually farmed for grain it must be changed to clovers and other grasses and then comes the question "what is it that will give the best results in increasing soil fertility and also the largest profits from grasses both green and in the form of hay?" The fact that many have learned the correct answer to this question is one reason why the sheep business has generally increased. Their droppings are the richest of known natural fertilizers and are well scattered over the pasture. In addition to this, the flock is the greatest of weed destroyers and killing such large quantities of numerous weeds preserves in the soil that plant food which the weeds would have consumed. So the flock adds strength to the soil in two ways, and the good returns from their eating nearly every known weed is invariably underestimated. No other domestic animal will so completely clear the farm, and at the same time sheep use weeds as food. Apart from preserving soil fertility, the total riddance of weeds adds much to the appearance of land. Farmers, as a whole, have partially learned the value of a flock in this respect and those who are working to preserve their farms are not scoffed at as they were a few years ago. As more attention is given to the soil, the number of flocks will increase. If sheep consumed as much grain and hay accordingly as other stock, sold for the same market price, and had no wool, flocks would anyway eventually become more numerous on our farms in order to obtain the results just mentioned. But there are many more facts that place sheep in favor over other farm animals. Our population all must be clothed and their average wealth is such that good clothes will be purchased. That means large demand for wool and it is in evidence according to the high price for wool. The strong continual demand will always keep it there, too, just the same as wheat, corn, etc., which the millions of people must have.

The wool clip will invariably fully pay for the yearly upkeep of the flock, and no other domestic animal has a "side product" that will pay its yearly board bill. The lamb crop comes in as clear profit and it is a good large return according to the investment. More mutton is being consumed per capita and the great increase in population has made a noticeable advancement in the demand for mutton. The price of lamb on the leading markets during recent years has averaged higher than cattle or hogs. Even though prices were equal, lambs would be by far the most profitable owing to the cost of production. It has been demonstrated that from a given amount of feed, lambs will make the largest gain, and they are also much easier cared for than other stock. Many farmers have been born where cattle, hogs, and corn were about all they saw, and truly good returns have come from that sort of farming but it cannot always be continued. Experienced men say that the profits are not nearly so great now as in the past, and if it were continued without variation the farms would not be as valuable as they might have been and the world would sometime be glutted with beef and pork. Evidence of this comes from a large number of flocks having been founded during recent years on just such farms. The necessity of a change is realized and nothing else fills the place like a flock of sheep. Years ago the prevalent idea was that sheep were only good for rough brushy land which could not be plowed. They did give the largest obtainable returns from such land, but now farmers also know that they in their place give the largest returns from high priced land. Those who realize that no land can raise corn for an indefinite period are in a majority of cases putting in a flock of sheep. For the change, they give returns which no other live stock does. In past years many who knew the value of a flock did not get one owing to insufficient farm fencing. That difficulty is being gradually overcome because all farms are getting better fences. However, a five wire fence is quite good enough for sheep and that does not require much of an addition to the average fence. The principal cause of less flocks seems to have been because most farmers did not grow up where sheep were kept, so they have never given any attention to the true value of a flock. As deeper study is given to sheep, the fewer will be the number of farms without them. English farmers have long ago learned that in order to derive the greatest possible profit from a farm a flock of sheep must be kept upon it. As American land approaches the value of theirs, and the absolute necessity of soil fertility comes into prominence, and farmers figure for the last dollar that their farms will produce either directly or indirectly, then sheep will come into their proper place and there will be the right relation between the farm and the flock.

THE PERCHERON AND OTHERS.

The Wisconsin Agriculturist.

A recent issue of Collier's Weekly contained the following article regarding Percheron and other horses, written by Joseph Medill Patterson. In this article Mr. Patterson, who is a former student of the Wisconsin Agricultural College, and an Illinois horseman and stockman, discusses the evolution of the size and weight of the Percheron draft horse, the future prospects of the draft horse, and the "new move" in Wisconsin horse breeding due to the passage of the stallion law, devised and fathered by Dr. A. S. Alexander, in charge of the horse breeding department at our Agricultural College at Madison. The article is interesting to Wisconsin breeders and farmers. We therefore print it in full:

The automobile has cut into the Hackney and the trotter. Folk, Hughes and John Healy of Chicago have about extinguished the thoroughbred, but nothing like that has happened to the draft horse. He never had a better year.

The Hackney was a gay-looking fellow that consumed as much life force going up and down as straight ahead. Because of the pounding his feet and legs often went back on him, and he had to be coddled like a lady's toy dog. It took an Englishman to properly brush and blow the dust out of his hide of a morning—Americans wouldn't and Swedes couldn't. Anybody who owned a pair of Hackneys belonged to the leisure class.

Then the automobile came along. It went faster, looked flashier, and kicked up the dust magnificently. By night it sent tireless link-boys of light, two hundred feet along, ahead of it to announce its coming, and it cost several times as much as the Hackney. It soon relegated him, and now he is only a pensioner.

But the draft horse, so far, is safe from the machine. Maybe the auto-van will drive him from the city streets—that wouldn't be a bad thing for the city streets—but I don't think the autoplow and autoharrow will banish him from the farm, because autoplows can't raise little auto-plows each year to rustle for themselves in the pastures.

The draft horse is getting bigger and bigger. In the late '80s if one weighing over 1,600 pounds came from France it was an event, and the horse papers talked about him—with pictures. Today the draft importer will touch nothing under 1,800 pounds, and 3-year-old colts often run up to a ton.

The favorite draft breed in America—6 or 8 to 1— is the Percheron of France. He comes from Le Perche (southwest of Paris), and nowhere else. The horse breeders of that district have banded themselves into a guild or union and decreed and decided that no horse from outside the irregular borders of their district can ever be recorded as a Percheron in the stud book of the breed. A colt foaled just across the line, out of a mare and by a sire correctly registered, cannot himself be registered.

The foundation blood of the Percheron is, or is said to be Arab. The Frenchman will tell you that a Percheron is an Arab "made heavy" by the climate. But whether Arabian extract or no, it is sure that the breed has been made heavy by the climate or human selection during the past half century. When George Sand wrote, the Percheron was famous as a road horse, a traveler, a ground coverer. Her heroes used to drive hither and thither "behind four splendid distance-eating Percherons." No modern Frenchman would dream of driving up to his Ninette's door behind four Percherons.

The Perche peasants are artists, sculptors who, within the limitations of their material, most wonderfully fashion into being their equine imaginings.

It is much easier and simpler to carve a horse of the shape you want on the Parthenon frieze, than out in a lucerne pasture in the Eure-et-Loir district. Dazed by their artistry, the French Minister of Agriculture gravely reports: "These men of Le Perche are incredible! Command from them a horse, they will build you one to your specifications.

But they weren't clever enough to keep their best stallions for breeding. "Tempted beyond endurance by the incredible prices of the stranger," says the historian, "the country was being surely denuded of its most superb breeding animals." Naturally the oncoming generations were falling off, and then in 1885 the French government stepped in and began paying even more than "the incredible prices of the stranger" for the very best stallions raised in France. The fees charged for the services of these splendid government sires were fixed at ridiculously low figures—from $3 down to $1. The owners of horses not quite good enough for the government stud, but too good to be exported, were subsidized at from $80 to $100 a year to keep their animals at home and stand them to not less than sixty mares a season.

"Then," continues the chronicle, "began the American invasion, strongly apropos at a time when a crisis threatened ragingly over the breeding industry, following on the development of railroads; and their (the American) apparition was a veritable mine of good fortune for Le Perche; but they did wrong to demand that one should make a new type of Percheron for their convenience and almost to their measurement. They paid prices unknown until that very moment, but they exacted enormous horses, and it was necessary, therefore, to construct them. Then the dapple gray not being to their taste, they stipulated for black. This was likewise done for them. What would one not do to satisfy such good clients?"

These same good clients import about one thousand Pecheron breeding horses annually at an average cost of $500, which are sold in this country at from $1,000 to $3,000. Fewer than two hundred mares are brought over each year. The peasants of Le Perche hate to sell any except barren mares—not because they are afraid of us as breeders, however.

Hear the Percherographer, M. Vallee de Loncez: "The North American is not a veritable breeder. With the national device, 'Go ahead,' 'en avant,' he has not the patience, the perseverance, the consecutive series of ideas that are qualities necessary for breeding. He does not know how to wait. It is because the Yankee is not a veritable breeder that he has not been able to realize the dearest of his dreams: to create an American Percheron race superior to the French Percheron race."

And it is true that so far American bred Percherons have never equaled the imported horses in our show rings. In all the big shows of the past dozen years, the highest an American bred has ever ranked is second; and even second has been rarely won.

This is true, although the best blood of France has been imported year after year to breed from. In lineage the American Percheron is identical with the French, but he falls behind in conformation. You can hear a dozen explanations for this. Perhaps the best was given by J. B. Mc-

Laughlin of Columbus, Ohio. He says: "The soil of Le Perche is extremely calcareous, bone making. American soil is less calcareous. Consequently, the French Percheron is better boned than the American and always will be."

With which explanation we must content—or discontent—ourselves.

From the current report of the French horse breeding bureau, it is learned that during the fiscal year, 161,414 mares were bred to stallions belonging to the state, 81,207 to approved stallions, 9,467 to authorized stallions. That is bureaucratic, isn't it?—that a country should be able to report a thing like that. And in the archives of the French government is the name and description of each mare in France, together with data about the horse to which she was bred.

Bureaucracy goes farther. It says a horse to breed must be of a certain quality; otherwise his owner shall not be allowed to stand him publicly. Furthermore, all sires licensed to breed are subdivided into:

1. Those approved (and usually subsidized), recommended by the public veterinary as free from hereditary ailment, well put up, pure bred;
2. Those authorized—permitted to stand, but not highly recommended. These also must be pure bred.

The French never dream of breeding to stallions of mixed or unknown blood. But the American farmer who bred his mare to a Percheron for a heavy colt, usually changes his mind a couple of years later, puts what he got from the first cross to a coach horse for style, this product to a trotter for speed, and the grand result to a jack, for a mule. As a horse breeder, he doesn't shine, as M. Vallee de Loncez remarked. He looks only at the outside of a sire (and apparently not so very carefully at that) and cares little what kind of blood is running inside.

But Wisconsin (of course, Wisconsin) took the lead in this matter of horse breeding. They have a singularly forceful veterinary surgeon at the University of Wisconsin, who is also one of the most influential members of the faculty. (Fancy such a condition at Harvard or Yale!) His name is Alexander Septimus Alexander, and he "kissed" a bill to help horse breeding through the legislature. He hid the full import of it even from the legislators until after they had passed it. When the bill had become a law and its enforcement began, the owners of mongrel stallions shrieked. But it was too late. The legislature had adjourned.

Alexander's law provides that when a man stands a grade stallion publicly, he must announce in large letters on his advertising matter that he offers a grade stallion.

Speaking in a very general way, a grade is any animal of mixed, mongrel or impure blood. A big chunk of a blood bay with feather on his legs would be called a grade shire, for instance. Properly, a grade Shire could be got only by a pure bred Shire sire. To breed a pure bred mare to a mongrel stallion would not be grading up, but de-grading.

A grade is often a handsome individual, but he is unsafe to breed to, because the inferior blood concealed in him is apt to show in his offspring.

A pure bred animal is pre-potent. His blood dominates when blended with the mixed cross currents of a mongrel. If you take an Aberdeen-Angus bull (long a hornless breed) and cross him with horned cows, you will get calves that stay hornless in from 80 to 90 per cent of the cases.

But take a bull of one of the newer hornless breeds, Polled Jerseys or Polled Durhams, for instance, to breed to your horned cows, and 35 to 40 per cent of your calves will eventually grow horns. The Polled Durhams and Polled Jerseys have not been pure breeds for nearly so long as the Aberdeen Angus, hence are not nearly so pre-potent in transmitting their characteristics.

Alexander's law, besides compelling grade stallions to be advertised as such, absolutely prohibits the public scervice of stallions with defects pronounced hereditary by the state veterinary inspectors.

Wisconsin passed this law in 1903. Iowa, Minnesota, Utah, Pennsylvania, New Jersey have now followed suit, and the idea is spreading. The only incomprehensible thing about it is its absence from the Oklahoma constitution.

Personally, I hope to see the law passed in Illinois. There may be a bit of economic determinism in that. I have a sound, pure bred stallion, but there are two or three grades and an unsound one nearby. The law would make it easier for him and harder for them. I have talked with their owners and find them entirely set against the fool new-fangled Wisconsin notion of meddling with horse breeding, which is a private concern. Why shouldn't a man be allowed to breed his mare to the stallion he prefers? It is his mare.

It is merely another skirmish in the fight that is gong on all over the white man's world. The world is filling up, getting crowded. Elbow room is less than it was, and people can no longer be so free with their elbows as they used to be, even though they are their elbows.

In the meantime, up in Madison, Dr. Alexander is blazing away at his pet enemy, the grade stallion. He is now using his influence over the various county fair secretaries of the state to taboo all grades from county fair show rings.

I wish Dr. Alexander were attached to the University of Illinois instead of to the University of Wisconsin, because now he is driving scrub stallions in large numbers out of his state and into mine.

DAIRYING ON THE FARM.

W. B. GOODRICH, CLIMBING HILL, IOWA.

(Before Woodbury County Farmers' Institute.)

This subject, "Dairying on the Farm," that has been assigned me, is such a comprehensive one that I have been somewhat at a loss to know how to handle it in the limited time at my disposal, but have decided that perhaps the most useful way at this time would be to give some advice to the farmer who has not had much experience in handling cows for profit from their milk, but, realizing that there is but little profit in them from any other source, desires to try to add to his income in this way.

We will assume, then, that you already have some cows and heifers. Begin at once to arrange for plenty of good milk, making feed for them in fall and winter when pasture fails. This means alfalfa hay or clover for second choice, but does not mean timothy by any means. Good oat hay, cut just after oats have headed, is better than timothy for milk. It also means good bright corn fodder, or still better, corn ensilage. Corn fodder, after the corn has been husked, can be run through the cutter into a silo, spraying a stream of water on it at the same time, making an excellent feed that will be eaten without any waste and with a better relish than dry fodder. From our experience we believe this is the best and most practicable way to handle corn fodder where a man does not wish to make ensilage of the whole corn while green.

Before cold weather comes provide comfortable quarters for the cows and heifers. If they calve in the fall your chances for profit are better because you will have more time to care for them through winter, and their product while fresh is worth much more than in summer.

Right at the start get some spring scales and a Babcock tester and learn how to use the latter, unless you can get someone else to test milk for you. Keep a record of the milk yield of each cow and test often enough to be able to estimate closely the butter fat yield of each cow for a year. Sell the unprofitable cows to the butcher. If you buy others to replace them, don't buy square, blocky, table-backed beef cows. Remember, you are trying the dairy business, not beef making, and as a rule the better the cow for beef, the poorer for milk.

If you find that you are adapted to dairying, believe you can handle the business all right to your profit and wish to do so, buy a good registered bull of one of the dairy breeds. Drop the beef business and the general purpose idea right there. You cannot, simply *cannot*, raise beef steers and dairy heifers from the same parents.

Raise the heifers in the way they should go. That is, do not fatten them on corn or other fat-producing feed, but keep them growing on the same kinds of feed you feed your cows giving milk. Give them a good show, have them well grown at as early an age as possible. If you do this they should be bred to calve at thirty months old.

When you need another bull, buy the best one you can afford of the same breed as the other. Don't try crossing breeds. If you must be fickle-minded and changeable and bound to make a change, sell out and start over again. It will not take many years to get in the way I have outlined, a herd of high grades that will be profitable producers, provided you have continued to use the scales and tester, and kept the best while disposing of the unprofitable ones. Your education should now be far enough advanced so that, if so inclined, you can wisely invest in a few good registered females.

By continuing the same process of evolution, following the law of the survival of the fittest, in a few years more you will be a breeder of pure-bred dairy stock as well as a dairyman.

Of course, only the man adapted to the business, who likes it, and is naturally qualified for it, will reach the development I have mentioned.

But if he starts as I have suggested, and grows in knowledge with his business or makes his business keep pace with his knowledge, he will progress without risk of disaster such as might easily overtake a man who plunges into something he does not understand and may be entirely unfitted for, and will gradually slow up and stop at the point of development that represents the limit of his natural ability or desire.

One point I should have mentioned in the beginning. Take good dairy papers and read them. When you begin to think about that registered bull, post yourself on the different dairy breeds, so you can intelligently make a choice. Learn all you can about your business, and be guided by the advice and experience of men who are regarded as good authority and have been successful.

The man who is controlled by prejudice and refuses to believe anything he reads or hears that differs from what "Dad" used to do, had better let dairying alone.

To be successful as a dairyman requires a man to be progressive and willing to learn at every step, always ready to discard unprofitable or impractical ideas as soon as recognized, and quick to recognize them.

IS IT ADVISABLE TO CONSOLIDATE THE RURAL SCHOOLS?

MRS. JAMES MATEER, OSKALOOSA, IOWA.

(Before Mahaska County Farmers' Institute.)

The consolidation of rural schools has long been a topic of much interest to those working with the problem of making much of the child's few years of life preparation. It is a radical change from the present system, and its advantages and disadvantages should be weighed carefully. "Look before you leap" is an expression trite, but true.

The educator in his soul-stirring convention cries for the change. The farm mother hampered by her multitudinous duties, untouched by the convention's magnetism, cries "wait, wait, not in my child's time," neither one really conscious of the standpoint of the other. It is a blessing that the conservatism of parents serves as a check to impulsive leaders who else might too often experiment with their new-fangled ideas upon the child's soul.

Many a wonderful school improver is advocated in one generation that is never heard of in the next. Some, though tried thoroughly, are ignominious failures. The pity of it is, that never again, their faults erased, can their strength be practiced upon that generation of fleeing children. There is not a grey head facing me today, but has a brain both marred by some educator's mistake, and rounded by some skillfully directed force. Each of you is conscious as I speak, of some defect dating from what you now can see, was a mistake of some youthful director, and you also have some lofty principle, some element of success, power within yourself, that has caused you always to bless the day you came in contact with the teacher who put it there.

Thus considered, it is a delicate thing to thrust one's bungling hands into a school system. It is a task from which the thoughtful person well might shrink to advocate from a public platform. A radical change from a method of education which certainly has not been a failure in the passing years.

The heart of this speaker is with the rural child, and, because of her abiding faith in the simplicity and labor-blessed helpfulness of the average rural home, and the great need of its child remaining therein during his impressionable years, she pleads for the consolidation of the country schools.

It is not to be denied that of late years the country school does not attract pupils very far beyond the primary classes. The boy who works summers dislikes to go to school winters because no other boy of his age is there. If he is pretty well along in arithmetic he is apt to have a companion or two in his classes. If he studies algebra or botany he is alone and half feels that the neighbors are begrudging him the class time for a first reader drill. This state of things has grown gradually, caused partially by more time-taking methods for the little folks, and greater ease, as wealth increased, of sending the older children to the small college. The bright Johnnie and Mary are ready for that small college in their early teens. In their own little school they can not advance as they are able, but must repeat and review, fettered by lack of apparatus, by short class time, by the lack of enthusiasm of numbers, by too much power of choosing their own curriculum, and perhaps, by an inefficient or uninterested teacher.

The family is confronted by grave alternatives. They must break loose from their farmstead moorings and follow Johnnie and Mary to town, or send them away alone, or keep them at home awhile till they have lost some youth and interest with it.

With a township center school provided with a wholesome, common sense graded course of study, they can go in the morning, pursue studies suitable to their age and ability, and be where they ought to be at night—in the unbroken family circle.

The sending of our farm youth early away to school is one of the evils of country life. Free from their accustomed mode of living, so many have lost their health or contracted habits of idleness or expenditure beyond the family income, and, being away so much, seem not to be able to pick up again the farm life and its homely duties.

The township school would be a social factor to a greater extent than the isolated small school of the present. The children of the whole township being school comrades, will bring families into closer acquaintance, tending to keep the interest and attention away from the towns, more among the farming population.

A baneful influence of the small school is the frequent change of teachers, each one having her own mode of proceedure, not remaining in power long enough to measure the caliber of her pupils. Her employment is often subject to the whim of some family who at the time has power, influenced possibly by a spoiled child dominating a weak parent.

The central school should be able to do away with a few favorite patrons having things to their own notion. It could provide a continuity of mature, stable and efficient teachers adequate for the responsible position. At the same time its course of study should be carefully guarded against fadism or studies not calculated for the practical welfare of the rural youth.

The test of the sterling worth of a school innovation is time. Fad is short-lived; merit rises above the cloud of doubt and uncertainty and asserts its plea after the fanciful embelishments have been tried and forgotten. "In union there is strength" is as true of schools as of states. This union is no new and untried thing; from Massachusetts along the Ohio road it has come triumphant through every trial. It has been tried in our own state and kept its successful record and time will bring it to us.

The difficulty in making the change is no small problem. It is attended with expenditure of money, and, no matter how long its introduction is delayed, it will meet with more or less public disapproval. The American public rings true upon all matters of progress when once it understands; but, it has so many units, it is a cumbersome mass to mould into new ideas. The parent conservatism that blesses is not to be confounded with the parent old fogyism that stubbornly clings to the old, not looking for advantages in the new. The partition between the two is so thin that sometimes the best of us break through into fogy hall without realizing exactly where we are "at."

In life we must journey forward toward a better state of completion, each generation profiting by the onward march of others. Change is ever present, we must go. We can go near the lead singingly, helpfully, or we can be tugged along clutching and clawing at backward sureness like a cat being pulled along by the tail. This onward sweep forms new ties in families, and rends the old home to build the new; changes field methods as well as school methods. What a waste of vitality to go clutching and clawing! It takes no more energy to "right about face" in the general direction, and, besides, the clawing about is so apt to clear the reachable space of friends—the dearest comfort of the journey. The unyielding dispositions need the patience and pity—they will arrive and finally adjust themselves to the new way. Have they more affection because they thus reach so frantically backward? Not necessarily so; it is more adulterated with persistency.

Who does not love the little school? Think of the sacrifice it took to plant it on "every hilltop." Were the pioneers looking backward when they built the rude shelter for the neighborhood children? What of the pioneer mother who was glad to put the corn bread and bottle of milk—all she had—in the dinner bucket and send her children away to the log palace of learning? There they wrestled happily for a few months of the year with what books they could get, and cut off arithmetic and self-reliance in large chunks. In time it gave way to the box-building, sided, painted, window-shuttered—the neighborhood's pride. On its teacher's platform, ably directing her audience, was a maiden, who, on the backless seats of the old structure, had soaked in such a good education that she forgot about needing a diploma to herald its presence. Thither came the young men and the young women; they parsed, and ciphered, and hunted map rivers, and obscure capes, spelled the spelling book from end to end till they knew every word in old age, and debated till they kept it going in congress. Time passed and still the star of the little school was in the ascendency with forty to sixty pupils. It did its work well and out of it came many companions who walk the "long path" united.

The inevitable change has touched this pioneer legacy till its oft-times six to ten pupils speak for another forward step. If there is no "school house on every hilltop," there can be a school wagon taking the children therefrom to a school more in unison with our time.

In a discussion, such as this paper is the opening, the object is to hold aloft for public view, to offer for public consideration a theme upon which the public needs information. For this reason the following speaker will take the negative side of this question, and, it is to be hoped, the educators present will not fail to handle both sides vigorously.

In further consideration of the central school, I will dwell upon the topic of transportation. In preparation for presenting this paper, the writer talked with numerous farm mothers. Without a single exception they gave the reason of transportation for opposing the larger school. They all wanted the better advantages, the graded work, but getting the child to it was the terror. One mother was afraid the horses would run away, another was afraid the child would get wet before reaching the wagon corner, and take cold riding, but usually the fear is of the moral influence of the driver. In the number of parents approached was one father and he said it was all a "fool idea, perfectly impossible and gotten up by a few smart Alicks." I was bound to put this in, because this is woman's day, and to show how much more capable of unprejudiced reasoning is the feminine mind than the masculine.

It is my understanding that the driver is chosen by the school board, and must produce satisfactory evidence of character and ability to govern children. They are subject to his control and must be kept quiet and orderly en route. That the children are more safe from contaminating influence, than they often are in numbers by themselves in lonely lanes or crossing fields. If this is wrong, would ask the county superintendent to set us right in the matter.

I once saw a picture of the closing of an Ohio central school. A row of comfortable covered wagons were backed up outside the fence, and the lines of children were coming toward the different vehicles in a methodical manner. There was nothing about the scene that looked as if the most timid mother need fear for the safety of her child. It would seem more difficult to manage the condition of the spring roads than to get a man capable of taking care of the children.

The mistake in any school system is unpractical ideas. If Mary's make-up shows that she will be a common, every day woman, why load her with French grammars? Why stuff Johnnie about room at the "top" when he would only be hanging dizzily on if you boosted him there?

Alas! for them both when they learn such roseate views of their destiny that they slight humble work looking for something beyond their compass.

The education which does not create in the pupil a power and desire to do with all might whatever humble duty comes in life—that does not produce unshirking adaptability to circumstances—that education is a failure.

THE SILO.

GEO. S. LISTER, MANCHESTER, IOWA.

(Before Delaware County Farmers' Institute.)

The advantage of the silo I will try and give from what I can gather from the experience of others and my own.

I find the silo in this section of the country is fast growing in favor. A few years ago if you would speak to a farmer about a silo he would tell you that it cost too much and was too hard work to fill them, but some of them have put in silos and others are getting interested.

There are so many arguments in favor of them and so few against them, I wonder why more have not got them, but the past two years has made great strides in that direction.

I think corn is the crop to put in the silo as you can raise so much more of it to the acre than other crops. In regard to the ground, take a piece of pasture or sod, top dress it, make it as rich as you can, plow it and make a good seed bed. Use common field corn of the early varieties, drill it in, not too thick, so the corn will have a chance to grow large and tall with good ears and well matured when put in the silo.

I filled a 75-ton silo last season from 5½ acres with good rich feed and have heard of persons getting 30 tons from one acre. What crop is there you can raise on the farm, cared for in the usual way, that would return you one-quarter the feed for the amount of ground, quality taken into consideration.

The shrinkage of hay, corn and other grains cured in the fields, is from 25 to 50 per cent, and corn cut and put in the silo shrinks only 5 to 10 per cent. It shows a great economy in favor of the silo as it takes less than one-half the room for the same amount of ensilage as it does for hay and dry feeds. I think, taking all things into consideration, the round stove silo is the best for farmer use.

One has said when the green stalks are put in the silo they are worth as much for feed as the corn. Another writer says the green stalk without the corn is worth $8.00 net per acre after the expense of putting in the silo. When they are left in the field they are not worth over $1.00 per acre.

V. A. Hooper, Professor of Dairy Husbandry of Arkansas, says: "The silo is not only a valuable but a necessary adjunct to the dairy farm." Prof. W. J. Kennedy, of the Iowa Agricultural College at Ames, said at the institute held here three years ago—I will try to quote his words: "If you want to make money dairying, you must put in a silo. With a silo I can produce milk cheaper during the winter months than in the summer with pasture, and milk is usually 40 to 50 per cent higher."

It is not only valuable feed for cows but a cheaper feed for steers, young stock and sheep.

The 1908 Missouri Bulletin of Agriculture, says: "The silo in America will some day be as common as the cow stable I am satisfied beyond a doubt a farm of 120 acres with the silo will give a net income equal to 160 acres without a silo."

If any ensilage is left after the cattle are turned out to pasture, it can be kept until the latter part of the pasture season and if the dry weather makes the pasture short it is much better feed and less work to feed it than to go out in the field and cut green corn to feed the stock.

Professor Kennedy says: "When bran sells for $16.00 per ton, timothy hay is worth only $2.00 a ton to produce milk, although bran is higher than that now. You can buy protein in cotton seed meal almost as cheap as that at the present time, or if you have good clover hay I think that will answer."

Ensilage is rich in carbohydrates so you want to feed a small quantity of protein feed with it for a balanced ration for milk. It has been said that condensed milk factories would not take milk from cows fed ensilage, but as far as I can find out it is not the case when the ensilage is good. I will read one letter in support of it.

SILOS AND SILAGE.

C. W. ADAMS, AMES, IOWA.

(Prize-winning essay in the Contest held by National Corn Show Association, December, 1908.)

Corn is the ideal food for cheap milk production. The evolution of the silo has taken place in dairying regions where the winter season is long, and is the result of trying to counterfeit grass by preserving forage crops in a suculent condition.

The fundamental principle upon which silage making is based is the exclusion of air. If this is done the gases arising from fermentation seem to preserve the silage by the prevention of fungus and moulds.

The first silos were pits in the ground, but as it became evident that pressure must be had, to exclude air, and that to get this pressure depth was required, the silo has gradually come to be built above ground. The old type was square, but as the sides sprung out upon pressure allowing the corners to become aired and spoil, the corners were filled in and finally the round type was evolved.

Modern silos may be divided into four classes. First, stave silos, which are usually factory made and are shipped to the farm ready for erection. Second, steel silos, which are also factory made and ready for erection. Third, carpenter built silos, made on the farm by banding and sheathing upright studding with layers of thin lumber. Fourth, reinforced concrete, brick, stone or tile silos, built on the farm. The comparative cost varies largely with the locality.

A number of satisfactory types of carpenter built silos were formerly used, but the recent advance in prices of lumber makes their use less practicable. The majority of successful silos in use today are factory made stave silos bound with steel hoops. In their favor it may be said that the cost of erecting is small, they are comparatively cheap and they can be moved if necessary. They are made from the following woods, the comparative durability of which is in the order named. Redwood, cypress, Oregon fir, tamarack or larch, and white and long leaf yellow pine. A good silo may be made of redwood in the lower part and of some cheaper wood in the upper part where the strain is not so great.

A successful silo must have a solid foundation sunk below freezing line, a smooth perpendicular wall, and the walls must be air tight. Most silos are located outside the barn and this is to be recommended, since they add much to the appearance of the place and are handier to fill. The size will depend upon the number of cattle to be kept. The diameter should be such that a layer of at least one and one-half inches will be taken off the top daily in feeding to insure fresh silage as it spoils if left exposed to the air more than twenty-four hours. A cow will eat one cubic foot, or about forty pounds per day. At this rate to feed cattle six months the diameter of a 30-foot silo should be such as to allow about five square feet of surface for each cow.

The diameter should vary as the number of cows and the depth as the length of the feeding period. Capacity varies as the square of the diameter and the wall surface varies directly as the diameter, therefore the first cost, as compared to capacity, is less in a silo of greater diameter. However two small silos are recommended rather than one large one because the silage will always be in better condition.

The use of silos has three great advantages over dry feed methods. It is more economical, the feeding value of the product is improved, and silos make cattle feeding profitable, hence help to maintain soil fertility. The economy of silage results from the fact that cattle will readily eat the entire stalk in silage form, while in whole or shredded dry fodder a goodly portion of the stalk is refused. If fodder is stored in a dry shed the percentage waste in curing is not much different from the same in silos, since there is a portion of silage on top that spoils, but if corn is husked in the field the same crop is husked in the field the same crop in silage is worth at least 25 per cent more.

If the crop is to be stored the silo is the most economical storage room, since nearly twice the amount of dry matter may be stored in the same space in the form of silage than as fodder. Also crops may often be siloed that would otherwise be lost.

The greatest recommendation for a silo is that it increases the feeding value of a crop. The increased feeding value does not result from increased digestability, or from changed chemical composition, but chiefly from the physical effect and increased palatability of the silage, therefore animals may be induced to eat larger amounts. Owing to its succulence silage, like grass, keeps the bowels regulated and tends to maintain that degree of healthful vigor so essential in hard worked dairy and breeding animals.

Some silo advantages are indirect. The most laudable thing about the silo harvest system is that it does away with selling crops off the land, thereby depleting soil fertility. It makes possible a system of stock farming whereby nearly all the fertilizing constituents are thrown back on the soil in the form of manure.

Chief among silage crops is corn. If a large amount of coarse feed is wanted it pays to plant some large-stalk southern variety, but if a richer feed is wanted, northern varieties, which yield more grain, should be used. In either case a variety should be selected that will mature before frost. In the south sweet sorghum has been found to be a good silage crop as the tonnage per acre is greater than corn and the heads yield a fair percentage of grain. Red clover, alfalfa, and peas have been used, but owing to their juiciness it is difficult to get silage from them that will not sour. Mixed crops have also been used, but they rarely pay for the added trouble of mixing. Plants with hollow stems are unsatisfactory it is so difficult to force out the air.

There are several practicable types of silage cutting machines on the market. The blower elevator is used almost altogether now. In filling the silo care should be taken to tramp well next to the walls. It is best to take several days in filling, so that the air may be forced out more completely, thereby making a sweeter flavored silage.

Silage is pre-eminently a cow feed. It finds greatest favor with dairy cattle since it may be made to reproduce succulence of grass in winter or may serve to uphold the milk flow during the drought in summer. In dairies near cities where pasture is not available it often determines the difference between profit and loss by supplanting costly grain foods. It also makes possible the rearing of calves cheaply to replenish the herd. Some complaint has been made against the flavor of milk from silage-fed cows, but there is no danger from this source, if the silage is first class, unless the milk is allowed to remain in open vessels in the barn and so absorb the odors.

On the general farm the good effect of silage on the health of the breeding herd and young stock in winter can hardly be overestimated. It is an excellent feed for ewes with lambs. It may be used in small quantities for maintaining horses, though it is too sappy to feed work horses.

It is a significant fact that people who have used silos most are most enthusiastic in their praise. As farming becomes more intensive the number of silos will increase. By inducing the dairy farming they are destined to be of great service in conserving and restoring soil fertility and agricultural prosperity.

SILOS AND SILAGE.

F. J. MYERS.

(Before Cedar County Farmers' Institute.)

This subject is indeed a broad and very important one, when you consider the interest of him who tills the soil.

We are surely playing a losing game, if we simply sow and reap as our ancestors for generations have done. Not considering the new and improved methods of handling what we produce on the farm. The new methods presented for the consideration of the farmer are many, and each one of us will have to search out those best adapted to his particular line. For the man who wants to run a dairy or feed cattle the modern silo is the best of them all. It was not my intention to go back to the beginning of silos until a few days ago, I noticed in the *Register and Farmer* a statement so interesting to me that I will pass it along. The first silo built in the United States was in the year 1875, only thirty-four years ago, and six years later there were only ninety-one. The first one was built by a Frenchman after methods used in France, and not different from those in use now, other than the shape of the silo, and condition of fodder when made into ensilage.

Our Agricultural College made an investigation in regard to silos which was put in bulletin form under date of July, 1908. Their work of investigation was carried on through the mails which of course was not a thorough one. They located 161 silos in Iowa. All being sucessful, although varying according to the care that was taken in building and filling them. There are a great many kinds of silos. The first one was square or hectagon and large in diameter. They were a failure, as the silage would settle away from the corners and spoil, also spoil on the top because of too much surface exposed. At the present time it is agreed that the correct shape is round, and as high as can be conveniently filled. This will give weight to settle it right and keep out the air, which is very necessary. Care should be taken to make the silo small enough in diameter so that at least two inches per day can be fed off. In my opinion fourteen feet would be the limit, unless one expected to feed heavy all the time. The trouble with the large silo is when you want to feed light in the fall or perhaps continue the feed for a few cows in the spring after the other stock has been turned out for the summer. Two small silos is much preferred to one large one for this reason. And I dare say many of us have made this mistake for when you consider the small difference in cost, capacity considered, between a 100-ton and a 200-ton silo it is very tempting to build the larger one, but if you get a silo too large I promise you that you will always regret it. The length of time silage will keep varies a great deal. In weather cold and dry with mercury at 20 degrees above zero or colder, it will keep nicely and if there were no silage removed for three or four days you could go right on feeding without any loss, but when the foggy warm and rainy weather comes, as it always does at times through the winter season, then you will find it necessary to keep the silage fed off at least two inches a day, and three or four would be better. The farther down in the silo the better the silage as it is settled tighter and the air cannot penetrate so deep. The stave silo is the popular one at the present time, many new companies are springing up here and there over the country to supply the necessary demand. From reports that I have they are giving good satisfaction, and have some advantages over some other kinds as well as some disadvantages. If there are those here who have stave silos, I hope you will pardon me if my views of the same are not just the same as yours.

The great advantage of the stave silo is that it can be constructed with little labor as compared with some other kinds, and taking all things into consideration is perhaps the cheapest in first cost. When it comes to lasting qualities it will take the proof of time to convince me of their durability, as it seems to me they are more liable to shrink when empty and rot out more quickly than some other kinds. This is especially true when we consider the fact that lumber is becoming more scarce and kinds of wood are now being used that we would not use at all in days when we could get better kinds. I would advise the person who is intending to buy a stave silo to look well to the kind and quality of wood used. I noticed recently an advertisement for a one piece stave silo made of fir, and this strikes me as being something good. The concrete, brick, and cement block silos are common in some districts, but are more expensive, and I think would freeze worse than other kinds. I was told not long ago by a party who had estimates on a concrete silo, that it would cost between $350 and $400 for a 120-ton capacity. The girder silo can be built for less money. This kind is built with 2x4 studding sixteen inches apart, placed on circular sills and held in place at the top by circle plates, double lined with one-half inch fencing, being careful to break joints both ways. Inside of this we strip up and down, on each 2x4, then lath and plaster with cement. On the outside we place sufficient belts to withstand the pressure of the silage. These are made of three thicknesses of ½-inch fencing. The silo is set on a concrete foundation with three foot pit which will add to the capacity. We put a good roof on our silo as experience has taught us that silage wet from rain or snow is not palatable to the stock. This silo can be built for $200 if you do the work yourself. We expect to case ours with galvanized iron soon, which will add about $40 to the cost. This silo is giving satisfaction, and I heard recently the first one of this kind built in Illinois fourteen years ago is still in good and useful condition.

Care should be taken in selecting a silo to get one that will not freeze if possible. Cattle do not like frozen silage any better than we would cold and partly frozen food, although they make less demonstration about it. I have always worked the frozen silage in with the good and thawed it out enough to feed without loss or damage to the stock, although I have been told it was very dangerous to feed when frozen. I omitted one item in regard to kinds of material advisable to use in silos and that is to avoid using metal where it comes in contact with the silage, as I notice that a patch made from heavy galvanized iron on the floor where we keep silage laying only a part of the time has been practically eaten up by the acids in less than two years.

Filling the silo at the proper time is of great importance. In 1907 we filled ours with corn just nicely glazed in order to get in ahead of the frost; this made good feed, but not as good as might have been. Last fall we tried corn well dented and added a little water which makes better feed. I find that it pays to feed a little bran and crushed corn with the silage to cows giving milk. We feed about twenty pounds of silage, two quarts of bran, two quarts of crushed corn and cob meal to each cow twice a day and have received excellent results. During January, February and March of last year we milked thirteen cows which gave 24,163 pounds of milk, valued at $342.13, an average of $8.77 per cow for each month. Three of these cows were so near the end of their period of lactation that we turned them dry immediately after the test. In January of this year we milked ten cows, two of them heifers giving milk since June and one since November, the rest being aged cows. They gave 6,332 pounds, worth $98.15, an average of $9.82 per cow.

I do not give these figures to show what I have done, but to show what you can do if you will build a silo. I have tried feeding silage to chickens and find they will eat it with the exception of some of the coarse pieces, and it is an excellent feed for them in the winter months when they need green feed. Hogs will eat some of the best of it, but I do not consider it an economical feed for them, more than just as an occasional feed for a change and an appetizer. As to who should have a silo, I would say that every man who owns a farm should have one, and the smaller the farm the more the need. I heard of a man who had recently built a silo saying that any man who had a dozen chickens should have a silo. I can hardly verify this statement but I dare say that if you fed silage to a dozen chickens you would soon see the virtue of it as a feed and have something else to feed. As this is my first attempt to read a paper before your institute I hope you will pardon the fragmentary way in which it is presented and bring out the many points of interest I have omitted in the discussion that is to follow.

ALFALFA.

JAS. BROCKWAY, LETTS, IOWA.

(Before Louisa County Farmers' Institute.)

I shall not try to give you the history of alfalfa. I shall not try to tell you how old the plant is nor how long it has been known to civilization. We all know that as a forage plant it has no equal either for feed value or in productiveness. Especially is it rich in protein, that blood, bone and muscle making element that is so lacking in a ration composed chiefly of corn. It has been proven by several experiment stations that alfalfa leaves are of as much value for feed as wheat bran. And when we consider that five to seven tons per acre, even in Iowa, is not an uncommon yield, then the value of alfalfa can at once be recognized.

But I take it that these facts are familiar to most of you. That you know and realize the value of this great plant, and the great question is, how shall I secure a stand, will it winter-kill, etc. To be successful with alfalfa we must study the plant, study its needs, its nature, etc. Then fit the soil in a way and sow the seeds at a time that will meet these demands. If you are not willing to give the use of a portion of your best ground, or do a lot of work, and bear a heavy expense for seed, don't try to raise alfalfa in Iowa. However, if you are willing to do all this, if the harvest will justify the outlay, then don't hesitate to try alfalfa.

It is a common opinion that to secure a stand of alfalfa one must lose the use of the ground for at least one season. This is not at all necessary. This year we secured as fine a stand of alfalfa as one could wish to see on fifteen acres, that this year produced over thirty bushels of wheat per acre.

Whatever you do, don't try spring sowing either with or without a nurse crop. We tried it for five years in succession and failed every time. We used all kinds of bacteria cultures and soil inocculations and still we failed. However, we could not give up the idea that alfalfa could be made a success in Louisa county. We believed then, as we do now, that if alafalfa will succeed other places in the corn belt that it will succeed here.

At first alfalfa is a tender plant; the first few weeks of its life it is a mere thread of a plant. The rank growth of weeds, and especially foxtail, that we have here in June and July mean death to the little alfalfa plant every time.

Fall sowing is a different proposition and is far more certain of success. However, it means work and lots of it. But don't be discouraged on that acount, for it is work that pays. Select your richest and best drained ground; from this you may take a crop of small grain or potatoes, anything that will leave the ground free to be worked by the latter part of July. By the first of August this ground should be plowed and plowed shallow, not over four inches deep. As you plow, harrow down all, every half day, so that no clods can form. Make what you would call a first class seed bed for corn, then apply eight or ten loads of manure per acre, the more the better, and harrow at least once a week for a month. If rains come, harrow as soon as it begins to dry. Pack the ground all that you can below, but keep the top inch or so loose. Aim to bring the moisture that is in the ground as close to the surface as you can and hold it there by means of the dust mulch. Remember that the alfalfa seed is small and that a loose seed bed, such as we would use for corn, would not do; but rather a solid, packed seed bed as we would use for fall wheat, and exceedingly well prepared.

A good way of sowing is to use the seed attachment of a wheat drill, and put in the seed only deep enough to cover it. And now comes one of the most important parts, in my experience. Suppose that we have prepared our seed bed perfectly; that we have used at least twenty pounds of good seed per acre; that we have applied plenty of stable manure. The whole purpose of our preparation has been to conserve the moisture that is in the soil and to store it up. Now that the seed is sown we want to turn the full force of this moisture upon the little seeds. This can best be done by rolling or flanking the ground. This packs the dirt close to the little seeds, and the final packing of the ground forms the capillary connections which have been broken all the time by our dust mulch and allows the moisture to come to the surface just as oil comes up on a lamp wick.

Of the fifteen acres that we sowed this fall we left one acre without rolling, but handled in every other way as the rest of the field had been, on this acre the stand was not as good by 50 per cent.

Make a perfect bed.

Use plenty of stable manure.

And don't forget the roller.

Non-irrigated seed is best, and it is better to buy it from an Iowa seedsman, as the Iowa pure seed law compels the Iowa seed companies to properly represent their seeds.

By following the above methods we feel almost as certain of securing a stand of alfalfa as we would of securing a stand of corn. Whether it will stand our winters may be another question, but we have seen no tendency to winter-kill. We believe that it will winter all right. We have a three-acre piece that has made about twenty tons of hay, both last year and the year before, and is going into its third winter in fine condition.

We have a lot of confidence in alfalfa here in Louisa county and in the near future we expect to see a field of it on every farm.

POULTRY ON THE FARM FOR PROFIT.

W. L. WINK, IDA GROVE, IOWA.

(Before Ida County Farmers' Institute.)

This is something that should be of interest to every farmer. Spurgeon says that two things are needed to get on in life; elbow grease and stick-to-it. There is no way to learn to preach like preaching; you cannot make sailors unless you send them out to sea; you cannot be a good farmer unless you make a study of it and learn how. Just so with the poultry on the farm. There is no way to learn poultry raising like raising poultry, read up on the subject, study poultry books and papers and you will gain a great deal of valuable information.

The fact that poultry is one of the most profitable adjuncts of the farm and that the raising of the same is growing in interest cannot be denied and only a short time will elapse before it will receive the attention that it deserves. It may be the smallest income on the farm in some localities, yet it should not be overlooked. When we consider that for years it was looked upon as the work of womenfolks, we wonder how the change came about to work its way into being considered a part of the regular work of the men folks. The only way we can account for this is that when the women take up any branch of industry they carry it to success, then the men are ready to take hold of and continue same, then say see what they did after I began to take care of them.

I want to say a word or two right here in regard to poultry houses. Of course, if we keep chickens we must have some place for them to stay, and for them exclusively. It is not necessary that it should be a very expensive building nor an extensive one, but make it just large enough for what fowls you have, and it is easy to add on as your flock increases. Do not forget the scratching shed, or your profits will be lessened. Your hens won't get out when the thermometer is hovering around zero and scratch in a snowbank, and just remember this, a hen that won't scratch when she has an opportunity and one that is willing, but no place but a snowbank to exercise in will not make you any money.

Put in just what is needed and no more and place it in such a way that it will be handy. Do not put in those elevated or slanting perches for it has a bad effect on the hens, creates casts, sets the claws. The old roosters and a few boss hens will occupy the top perches and the others will have to go down lower. They have been weighed in the balance and found wanting. The low perches are much better. Place them around the walls with the dropping board underneath, both being hinged to the wall so they can be swung up out of the way when necessary. Your nest boxes place under the platform out of the way, and it suits the hens better to have them partly hidden. Be sure and have all the cracks closed. If you do not, don't be surprised when you go to feed some morning and find a half-dozen of your nicest hens with eyes and heads swelled and a lot more sneezing. You have a few cases of roup and you will not get any profit from them.

The old saying "that an ounce of preventive is worth a pound of cure" is as true in the poultry business as in any other place.

Now you have the house already for your hens, what kind are you going to get. Well you can get any kind that suits you. I am not going to tell you that common hens are no good, and that in order to make any money from poultry you must have the pure-bred to start with for I know better, but I do believe in pure-bred poultry and in improved poultry and improved stock of all kinds and I would advise all who keep common fowls to breed them up to a higher grade. For myself I would start with pure-bred stock. All you need for a beginning would be a half-dozen hens and with good care you could raise enough to have a good sized flock the second year. I think your profit would be greater for the reason that there is always a demand for good pure-bred breeding stock at considerable above market price and the cost of keeping them is no more than that of common fowls. Then again, they look so much nicer that you take pride in showing them and caring for them.

Now you have a good house and a nice flock of hens in it, and everything to make them comfortable in way of shelter and right here is where nine out of ten make the great mistake and so great is it that it leaves the profits so small that it hardly pays to figure them up. A hen can take care of herself pretty well as long as nature provides her with plenty of green grass and lots of bugs and warm weather, providing you have "get up and get" enough to you to keep the lice and mites from eating them alive. But they cannot take care of themselves in the winter when it is cold and snowy. Then is the time that if you want eggs you must look after your hens, do not think it too much trouble to give them warm water to drink and a variety of grains to eat and don't wait until noon before you look after them; they should be fed as soon as it light and by sunup you can go out and bring in fresh eggs for breakfast.

If you have everything else that is necessary and leave out the care your profits will be nothing, but give them the care they should have and you will always have plenty of eggs and be happy.

Another great stumbling block to your success in the poultry business is in not culling out your flock every year systematically. Do not catch the first hen you come to and chuck her in the coop for it might be one of your early pullets and they are what will give you your winter eggs. As a rule it does not pay to keep a hen for laying more than two winters, but I will venture to say that in the majority of farm flocks you will find them all the way from one to six years of age, but if you wanted to sell everything but your one and two year olds, could you do it and be sure of leaving nothing older than two years old. The only sure and correct way is by foot marking when little and record it so you can refer to it and you can tell just what year they were hatched. The profit will more than pay for the trouble in marking. Try it. Your best winter layers will be from your March or April hatched pullets.

The future looks promising to the man or woman with the hen. The high prices of beef, pork and mutton has caused an increased consumption of poultry and eggs. It has been fully demonstrated that a dozen eggs have as much nourishment in them as a pound of meat and will produce a better development of the human race than the eating of so much meat, especially pork. It is the poultry man's opportunity to supply it, and why shouldn't the farmer be the one to do it.

The price of eggs and poultry will be just what the hens make it. Armour or Morrison or any of the large packers cannot rule the price of eggs like they can the hog and cattle market, for just when they think they have all the eggs in their control the old hen will begin to cackle and you soon have plenty of eggs that the meat kings were not looking for. Do not be afraid of a corner on eggs and poultry.

When we learn of the great number of egg consumers in the United States and of the millions of dollars sent to foreign countries to pay for imported eggs, we read in Secretary Rusk's report which says the time has come when the importance of the poultry interest should be recognized in this department, the poultry products of the United States has a farm value of $200,000,000. This was in 1899. I was unable to find figures of more recent date. No less than 16,000,000 dozen were imported at a first cost of 15 cents a dozen or nearly $2,500,000 while the average annual value of such importations the four years previous were $2,216,326. Such facts emphasize the necessity for encouraging the increase of domestic fowls of all kinds and they further indicate beyond question that this industry is important enough to demand special consideration of this department and besides the $200,000,000 value of eggs there was about $81,000,000 to represent the poultry or $281,000,000 for eggs and poultry produced in the United States.

The consumption of eggs per capita is one egg every three days for every man, woman and child. Not so great is it, and yet the United States is not supplying nearly all of this, so my brother farmers, do not think that the poultry business is overdone. Many of you can increase your flock and take better care of what you have and double your profits, for in whatever business you are engaged if it pays to do it at all it will doubly pay you to do it well.

CLOVER AS A MEANS OF MAINTAINING SOIL FERTILITY.

J. J. GASTON, WINTERSET.

(Before Madison County Farmers' Institute.)

The maintenance of the fertility of Iowa soil at present prices should interest every owner and every tiller of the soil. The price of our land is based upon the productiveness of the soil. The business of the shrewd land agent is to sell you acres, furnishing you a warranty deed, but no guarantee as to fertility. If you purchase a piece of land and find that it has been systematically robbed and will not produce half a crop, you have no recourse on the man who sold it to you. Cannot proceed against him for obtaining money under false pretense. What is the best and the usual test of fertility of soil? We answer, plant it to corn. Why the Iowa farmers dreams *of* corn, *for* corn and its by-products may produce *good* dreams and *bad* dreams. Food for man and beast. An Iowa farm that won't produce corn has lost its value and standing. A farm in Madison county that won't produce corn has lost its charms and value. No corn—no money! No money—bankruptcy! Corn means everything. Why, did you ever stop to think what an immense pile one year's crop of Iowa corn would mean? It means this: Loaded in wagons containing fifty bushels to the wagon and allowing thirty feet to the team and wagon, start the wagon westward upon its journey around the world, crossing the Missouri river at Omaha, on westward across the plains of Nebraska, over the mountains of Colorado, across Utah and Nevada, over the mountains of California, on westward across the great Pacific ocean to Japan, ever westward to the Japan Sea and Korea, and still on and westward across the Chinese empire and over the limitless wastes of Siberia, still westward through Russia and Austria Hungary, on through Germany and across France, over the British channel, across the British Isles and still on across the broad Atlantic, over Rhode Island and Connecticut crossing the Empire State, through Pennsylvania; on, ever on, westward across Ohio, through Indinana and Illinois, back across the great Mississippi and on to Winterset. A complete circle of loaded wagons around the entire globe and yet the great pile is not exhausted. Not until another line of loaded wagons encircles the globe more than half again." This is *not* a *dream*. This is a mathematical truth. Made possible only in *Iowa*. And if it were not for the fact that the land robber had been at work the *second* line of wagons loaded with Iowa corn would have been in long ago.

The United States government cannot run a mint with everything going out and nothing coming in. Everything *going out* and nothing coming in isn't good for a railroad station! Then why not apply these plain, everyday truths to our farms? It is true that the systematic robbery that has been going on recklessly for many years is a serious menace to the continued prosperity of the farmer. It costs more to raise a half crop than it does to raise a full crop. It matters not how thoroughly we may prepare the seed-bed and how well we cultivate the crop if we have robbed the land of its fertility we will only get what is by right due us—a light crop. How can we make restitution? How can we pay the debt? If you owe me a hundred dollars and have a credit at the bank you give me a check. If not, you may go to the bank and borrow the money and pay the debt. Now it is not my intention to go back several hundred years and try to give a scientific treatise on common red clover or the "Clover Quartette" feeling that this is not necessary. I do believe that every Iowa farmer is indebted greatly to "Common Red Clover" and I am convinced that common red clover *can*, and *will* pay more debts and add more to his wealth, if *generously* used, than any *one*, and I might say *all*, other popular fertilizers combined. Many a man has lost ten dollars trying to save a quarter. Many a farmer has lost $500.00 because clover seed was selling 12 or 15 cents too high per bushel. Too high! Can't afford to buy it! I am in a position to know from personal experience that clover seed is not *prohibitive* at $25.00 per bushel. The writer owns a worn-out farm that a few years ago, planted to corn, raised about seven bushels of corn and forty-five bushels of cockleburrs to the acre. The cockleburrs showing 110 per cent germination. From this same *identical* land we have always obtained a *full* crop. That farm has paid the original cost, interest, taxes and for all improvements, viz.: Good fences, good sheds, etc., and has advanced in price $95.00 per acre; and to "*Common Red Clover*" the honor is due. We didn't do this by waiting until seed got cheaper. We didn't do this by counting the seeds. How I *hate* a *stingy* man! I once heard Robert G. Ingersoll say: "Young man, if you have but a dollar in the world—spend it like a lord." And I want to say to my farmer friends: If *you* have but ten dollars in the world, spend it for clover seed *and sow it like a lord!*

Consider well the clovers. 1st. The old reliable "Common Red. This is the standard. 2d. The Mammoth. 3d. The Alsyke.

The white and the "Four Leafed" will take good care of themselves. "The time is here that determines whether a man is capable of becoming a true farmer with a happy home and family; independent, as only the *farmer* can be, or a 'soil robber,' with a heavy mortgage and bankruptcy staring him in the face." The King drag will not make a good road if left in the fence corner. Clover seed won't help you out if left in the granary or the sack. "It was not the intention of the Supreme Being that our fair State of Iowa should be doomed to sterility and barreness through the folly and parsimony of man. He has provided in the Common Red clover a sure means of restoring and conserving rich and abundant fertility to the soil of every farmer and stock grower who is willing to accept and use the means within the reach of every owner of a sterile farm" with a big mortgage attachment or of an humble tenant, who has a two to four year lease.

Consider well the clovers. The pigs in clover is no longer a puzzle. If we had bought clover seed with the money expended for blue sky (of which Texas has a surplus), Bohemian oats, portable pantries and the many patented devices whose only real merit consisted in separating a man from his money, and had sown the seed intelligently and honestly we, today, would be a more prosperous people.

When you buy clover seed buy it from a responsible and reputable dealer and pay him a fair and equitable price for it. If you do this, under the provisions of the pure food law, you are measurably protected against polluting your land with noxious weeds. Insist that you are getting a seed of at least 95 to 98 per cent germination. My experience in selling clover seed for more than thirty years has been that the old axiom which applies to almost every commodity is especially emphasized when applied to clover seed and that is: "The best is *always* the cheapest."

This applies also to stock, the field and garden seeds. In many cases I firmly believe the man who buys a second class farm and first class clover seed, sowing generously, can show a better per cent of gain than the man who buys the high priced land and sows a little or no clover seed. In fact much of our soil ranking as second class lands selling in many cases from $50.00 to $65.00 per acre, are the best adapted to the growing of clover. Experience teaches that land that will grow a heavy crop of clover will produce a good crop of corn; true it may not repeat the corn crop as often without changing as the higher priced land, yet by careful figuring the per cent of profits on the investments the cheaper land will give you the better return, especially to the man of moderate means who has to carry a mortgage of from 50 to 60 per cent of the original investment. As a rule one acre of the first class land will not beat two acres of the second grade, either in blue grass, clover or corn, provided always, 1st, he will market the finished product, viz., horses, cattle, hogs, etc. 2d. Accumulate, husband and use all fertilizer on the farm. 3d. Sow generously red clover seed wherever he can, with the oats, with the barley, with the wheat, and even in the corn after the last plowing of the corn, crossing the same with cultivator with harrow attachment if desired to leave for meadow the next year. If this is not desirable sow just before the last plowing of the corn. If this be done you may get good results. Time would fail us, your patience exhausted, and the half would not be told of the possibilities, the mine of wealth within the reach of many, in the intelligent and generous use of red clover seed.

Then sow clover seed.

"Since the time we have to live
In this world is so short let's strive
To make our best advantage of it,
And pay our losses with our profits."

MAINTAINING THE PHYSICAL CONDITION OF THE SOIL.

W. B. GOULDING, BELLE PLAINE, IOWA.

(Before Benton County Farmers' Institute.)

The words, physical condition, as applied to the soil, relates to the structural condition or state of granulation or crumb structure of that upper stratum of the earth's surface commonly called soil. The science of soil physics does not inquire into the chemical composition of soils or into what amount of fertility they may contain, but is of great importance in teaching how that fertility may be made available to the growing crops.

The soil chemists tell us that there is stored up in the average soil of this section enough fertility to last for many generations, but very little of this stored up fertility can, even under the best methods of soil management, be made available at any one time. It is a well recognized fact that a rational system of soil management is the foundation of successful agriculture, and the real reason why some farmers make their calling a brilliant success while others make it a dismal failure and finally "fold their tents like the Arabs and quietly steal away" to start anew upon upon the virgin lands of the west, is found in the difference in their systems of soil management. A great French writer once remarked that there is in the universe an all-wise providence whose eternal purposes embrace all accidents converting them to good, and if the farmer neglects to maintain his soil in a good physical condition he will soon arrive at the point where providence will no longer permit him too draw a subsistence from the stored-up fertility of the soil.

This sometimes happens before the soil has been brought to anywhere near its maximum producing capacity. Nature has placed metes and bounds to the operations of the soil robber. She says to him: "This far shalt thou go and no farther." Then the soil robber says: "The land is run out; farming no longer pays here." So he sells his farm and wanders on to pastures new, leaving the land to others. Others who understand that the soil is not a fixed and generally decreasing source of income as are many of the other natural resources of the country. The wealth of the soil may not properly be compared with a fixed bank account upon which drafts in the form of crops are continuously drawn with the ultimate result of the complete exhaustion of the capital involved. The soil is more nearly comparable with an invested fund whose annual interest is paid in the form of crops and, which under proper management, may be continually increased from its annual earnings. The forces of nature which have produced soils have not ceased to act, and through their steady, continued operations, they are capable of maintaining and renewing the producing power of this great natural resource when they are properly directed and assisted by the husbandman.

One of the principal agencies in making the crude materials of the soil available for growing crops is the action of bacteria, the action of those minute organisms which produce the phenomena of decomposition and decay as well as those forms that combine the nitrogen of the air with the elements found in the soil and in the roots of growing plants. It is a well known fact that these organisms thrive best when the soil is in a good physical condition.

Perhaps it would be well to discuss briefly what is meant by a good physical condition of the soil. Every farmer knows pretty well what a bad physical condition of the soil is: The humus of the soil may be exhausted by excessive cropping and neglecting to use the legumes or grasses in the rotation; then the soil loses its granulation or crumb structure; when wet it becomes like putty, lacks the porous nature of productive soil, is heavy and dead. The clay appears on the hillsides and when heavy rains come, the water being unable to soak into the soil, runs off on the surface causing excessive washing away of the richest part of the soil, as well as the formation of ditches and gullies and the farmer is given an object lesson of the way that the "Father of Waters catches the hills in his arms and drags them down to the ocean." Dried out the soil is baked and hard, difficult to cultivate, crops fail to do well, the tender rootlets can not find many pathways to penetrate among the insensible clods which the rude swain turns with his share and treads upon. If the oak should send his roots abroad he scarce could pierce that mold. The soil has become, as it were, a mass of dead matter. The water from below can not rise through the capillaries of the soil because the soil has not the capillaries. In times of drouth plants in such soil wither away like the seed that fell upon the rock because they have no root. A similar result may be obtained by allowing stock to tramp the soil during the early spring or by going upon the land with harrows and other implements when it is too wet. The result is that the farmer, like the Israelites of old, makes bricks without straw.

On the other hand, a soil in good physical condition, has much the structure of a sponge; it is filled with decaying vegetable matter or humus, the soil particles adhere together in small masses, forming what is called a crumb-structure. The decaying vegetable matter forms parting planes separating these crumbs and rendering the soil friable and loose. The air freely penetrates among the particles of the soil assisting the bacteria to fit the crude elements for the use of growing plants. Every soil particle is surrounded by a thin film of water held in place by the force of gravitation. The soil is not wet, it is moist. This soil water holds the plant food in solution. Other water rises from below, deeper down in the earth, to take the place of that absorbed by the growing plants or lost in evaporation, for the capilliary attraction of the soil is good. The loose crumb-structure of the soil makes it easy for the tender rootlets of the growing plants to push their way among the soil particles and lying close to the small soil masses the rootlets drink up the soil water with its liquid plant food.

The soil is warm for the air circulates among the soil particles and seed planted in such a soil quickly germinates and like that that fell upon good ground, brings forth fruit a hundred-fold.

It is a well known fact that a soil containing an excessive amount of moisture can not be put into good physical condition. An attempt to cultivate such a soil is time and labor wasted. The water in the soil prevents the air from entering, prevents the growth of the beneficial forms of bacteria and aids in the formation of acids injurious to growing crops. Therefore, if a soil is wet, the first step toward putting it into a good physical condition, is to drain it. The next important thing in maintaining the soil in good physical condition is to keep up the supply of humus or decaying vegetable matter. Nature has, when left to herself, always provided for the maintenance of the humus supply. She will not tolerate bare ground. Let man destroy the vegetation of a plot of ground and Nature at once commences to cover it with a mantle of green. She covers the ground with a carpet of grasses; their leaves prevent the rays of the sun from burning up the organic matter of the soil, prevent the winds from scattering its particles and the floods from sweeping it away. The roots bind the soil together and the plant decaying leaves a supply of humus in the soil so that two blades of grass may grow where but one grew before. We should learn a lesson from Nature and never leave the soil bare to the burning rays of the summer sun. We should avoid all unnecessary waste of the humus already in the soil and add to the supply by an intelligent system of crop rotation. Clovers or other legumes should be frequently grown. Green manure should be plowed under. Corn stalks and straw should not be burned but their organic matter should be returned to the soil to furnish a humus supply and a store of plant food for future years. In this connection it is not generally known that the farmer may add indirectly to the supply of nitrogen in the soil by plowing under material of this kind. There are several forms of nitrogen fixing bacteria that use the carbonaceous matter in the soil in the process of fixing atmospheric nitrogen. Speaking of this matter, Prof. A. F. Woods, says: "In warm, well areated soils containing sugars, starches, and cellulose from decaying grasses and other vegetation, and well supplied with carbonate of lime or other bases and mineral foods, these bacteria fix considerable atmospheric nitrogen. The amount, of course, depends upon the nature and amount of carbohydrate food available, the species present, their number and the degree of favorableness of the other factors mentioned. In ordinary cultivated soils the supply of available carbohydrate materials is the factor that usually limits free nitrogen fixation."

As much as possible crops should be fed on the farm and the manure returned to the soil in order to keep up the humus supply. Stock should not be allowed to tramp the soil when wet. Neither should the farmer cultivate too early in spring or immediately after rains. Erosion of the soil should be prevented as much as possible by intelligent methods of cultivation, preventing the formation of ditches and keeping rolling land covered with vegetation as much as possible. To state the meaning of maintaining the physical condition of the soil in a single sentence, I feel that I can not do better than use the expression of Henry Wallace, and say: "Keeping the soil in good physical condition means keeping it in such shape that the growing crops can get the juice out of it."

FORESTRY FOR THE FARM.

G. B. BLISS, AMES, IOWA.

(Before Clinton County Farmers' Institute.)

The farmer is, in many ways, becoming more and more vitally related to the forestry problem. The questions of lumber and fuel supply, protection from the winds and heat, climatic conditions, irrigation, water supply and other phases of forestry are coming to be of paramount importance to agriculture as well as to all other industries of America.

In the early settlement of this country the question was "How can we clear the land of trees most quickly and economically?" Hence a terribly wasteful system of forest removal was inaugurated. All over the United States forests were hewn down without regard to their value. The timber allowed to rot or deliberately burned to get it out of the way, if now available would be worth billions of dollars. Yet conditions demanded this sacrifice. So the forests, with their enormous resources, had to go.

Today conditions have changed. Thousands of acres of the very land so ruthlessly shorn of its forests in former years is now practically worthless for agricultural crops. The soil has been eroded leaving the rocks in conspicuous relief. Corn, tobacco and cotton have been the wealth producers of America but their culture has wrought havoc with the basis of American prosperity and power, the soil.

With the scarcity of trees comes the rise in the prices of lumber. Every year the farmer pays more for his lumber and hauls out a lighter load. Every year the thickness of a board contracts a little. A common inch board now seldom exceeds two-thirds to three-fourths of an inch in thickness.

There is a constant tendency to force lumber of inferior quality upon the market. Brashy and checkered boards, light in weight and with little durability are the rule rather than the exception.

We are warned of a timber famine and the warning has come none too soon.

While distant portions of the earth, such as the Philippine Islands, the Amazon valley and portions of Africa, still have a surplus of timber, the Mississippi valley has a deficit which is yearly growing greater. It is this fact which so vitally concerns the Iowa farmer.

Many contend that, owing to the numerous substitutes for wood, the demand for that commodity will steadily diminish and finally cease altogether. Such is not the case. It is an undeniable fact that the demand for wood is increasing every year despite the extensive use of the substitutes. More wood is now used than ever before. Steel, iron, concrete, cement nor any other material can supplant wood in many of its uses. These substitutes may be hard and durable and free from insect and fungus attacks, but still they are heavy, break quite easily, are seriously affected by heat and cold, cost a great deal more and utterly lack the elasticity of wood.

But where is the necessary timber to come from? Practically all of the eastern states have been stripped of their forests. Little is left except large areas of charred stumps, and scattering saplings or sprouts where once stood vast forests. Nature has very kindly created new forest growth in many places of the east and south where the ravaging hand of man has wrought destruction. Many of the abandoned farms of those states have young tree growth well started. The old plantations of the south, rendered desolate by the civil war, have a new stand of long leaf pine upon them.

As yet these trees are too small to cut for lumber. For the present, the farmer must depend upon the Pacific states. The tall Oregon pines and white cedars must respond to the demand. But the cost of transportation coupled with the increased demand and unreplenished supply is certain to boost prices.

Iowa land is too high in price to profitably turn large tracts into forested districts. High as lumber may be, the returns from forests cut forty to eighty years hence on land now worth sixty or eighty dollars an acre would never meet the interest on the capital invested.

Still there is much land in the state that should be planted to timber. This is mainly the rough sections along bluffs and waterways, and the steep clayey hillsides which have been eroded until cultivation does not pay. Such lands should be put in forests and kept that way because they are of little agricultural value and because primarily, some forested areas are essential in every section.

Forests are great soil formers and renewers. In rocky regions a tree starts in the barren soil, sends its roots down into the rock crevices, loosens and penetrates the soil in every direction and subjects it to the action of the water and bacteria which enrich it. The tree prevents washing by holding the soil with its roots, renders the ground porous, adds humus year after year and finally converts a barren, sterile land into a rich, productive one. Forests hold the snows in winter and act as a sponge to absorb the water which is precipitated at all seasons. One of the most serious problems in the east has arisen because the forests have been depleted from the hills upon which large cities depend for their water supply. The cleaning away of the vegetation from the higher lands has left no humus to hold the water precipitated. Consequently the hard rains give rise to torrential streams which rush into the valley, eroding all the fertile soil and, upon augmentation from other streams causing floods with consequent enormous losses to life and property. Then the hills become barren, the springs cease flowing, the rivers subside into sluggish streams, wells and underground current that formerly flowed constantly, diminish in volume and flow only intermittently or not at all.

Forestry is vitally associated with irrigation. All waters used for this purpose in the west are obtained from the mountain sides. The coniferous trees growing on the mountains shelter the snow from the sun and hold it until late spring or summer, then slowly melting it feeds the streams from which water is taken for irrigation. Where the trees have been cut, the wind blows the snow from the mountains into the valleys where the sun rapidly melts it. The water thus formed rushes off in early spring in torrents. When the farmer wants water for irrigation he may find it in the Gulf of Mexico.

When the pioneer first broke the western prairies he had little trouble with insects. Large areas were cleared and planted to agricultural crops. The equilibrium of nature was disturbed, the plants upon which the insects had been feeding being killed by the plow and harrow and these insects turned to cultivated crops. As large areas were planted to corn and other cereals, the enemies of these grains swarmed in to feed upon them. With the destruction of the woodland inevitably followed the slaughter of the birds which the trees sheltered. Without protection from the birds of prey and the gun of man these insect eating birds were seriously depleted in numbers. In many cases they have become extinct or have left their old haunts entirely. Then, with their foes gone, the insects multiplied at an enormous rate and devastated the farms. Hence, the farmer is now troubled by hundreds of species of insects which annually cause a loss of about $700,000,000.

THE CATALPA FROM A SEED TO A FENCE POST.

M. C. BURNET, ALLERTON, IOWA.

(Before the Wayne County Farmers' Institute.)

The farmers of the middle west are facing a post famine. The second growth of native timber, where available, is poor post material, and almost all of the matured trees have been used. The present high priced labor and the expense of transporting post material from a distance makes it an item of expense to replace posts every few years. A solution of the problem is to plant a growth of catalpa speocia, or hardy catalpa. This tree is of quick growth and the wood is light, strong and durable. It is a native of the Wabash and its tributaries in Indiana and southwest. More than eighty years ago in an address at an agricultural fair in Cincinnati, Gen. Harrison gave an account of a catalpa log over a small stream in the lower Wabash country that had been in use as a foot bridge one hundred years and was still doing duty as such. The catalpa timbers in the government stockade at Vincennes, Indiana, were sound after being in the ground eighty years, long after the other timbers had fallen with decay. We have authenticated reports of catalpa fence posts that have been in use for fifty years and bid fair to last fifty more years. This wood is practically indestructable in the ground, or in contact with it; the lumber has a nice grain and takes a fine finish, does not warp, or even check. The catalpa trees have endured a temperature of thirty-five degrees below zero and started growing the next spring.

In regard to growing the catalpa, first be sure to get the seed of catalpa speciosa and not catalpa bignonioides; the latter is a southern tree, tender as a peach tree and the wood of no value, as are also the Japanese catalpa and its hybrids; second, prepare your seed bed early and keep working it to get it in fine tilth and all the weed seeds near the surface to grow before planting the catalpa seed. About the last week in May or the first of June, when the ground is moist, not wet, plant the seed in a plat, drill about a foot wide and cover about one-fourth of an inch deep; sow the seed rather thick, as not all will grow. A good stand of plants will be of little trouble; make two or three different plantings a few days apart, so if the climate conditions are not right one time they may be another. The next spring the plants are ready to set in a grove. In my first grove I set the trees four feet apart each way, but that is too close. For the next grove I shall set the rows about ten and one-half feet apart and about three feet apart in the row; that gives a chance to grow two rows of corn or potatoes between each row of trees for two or three years while the trees need cultivation. After the trees are large enough to use a team can be driven through to haul out the poles, which is better than dragging them out by hand. After the trees have grown one or two years, cut them off at the ground with a sharp mattock or ax when the ground is frozen. After they start in the spring, pull off all but one of the best shoots; this will grow from six to eight feet that year, straight as an arrow. The next fall and winter care should be taken that the rabbits do not injure the trees; after that there is not much danger.

I believe a plantation of catalpa will yield more revenue than any cereal crop. We have reports of an annual income of twenty-one and one-half dollars per acre for fifteen years after deducting all expenses for labor and rent of land. Trim the catalpa and cut the posts in November, or as soon as possible after the leaves fall. A limb cut when the sap is up will cause a decayed spot in the tree. A post cut in November is worth two cut in May. I believe one thousand posts can be grown on an acre of good land in ten years; it is surprising how much timber will grow on an acre when it is as thick as it will grow. As the Scotchman said to his son, "Plant a tree Jock; it will be growing while you are sleeping."

HOW I WOULD RUN A FARM IF I WERE A MAN.

FANNIE E. BECK, WOODBINE, IOWA.

(Before Woodbury County Farmers' Institute.)

This subject may seem along the line of the new woman, but nevertheless, a farmer's wife has several impressions about farming that can be expressed in this way which would never dare to be mentioned at home.

I honor the woman who can do more than simply keep house if the occasion arises. I know a woman who can harness a team, hitch it up properly, cut and rake hay or stalks, drive the horse to the hay fork, husk corn, and even run the binder, and many other kinds of farm work along this line when it was impossible to get a hired man at $25 or $30 a month and found, and you could get an excellent girl for $10 or $12 who would not only do the house work neatly and well but would keep the lawn mowed and take care of 200 or 300 little incubator chickens.

The hired help problem for the farmer is a serious one. When hired men don't take any interest in anything much but the care of their own horse or team, as the case may be, giving them as much care each morning as your work horses get in a week, and doing as little as possible during the day so as to be able to do the bumming act properly in the evening while you do all the chores.

When a farmer is out $40 or $50 a month it is only right to expect some returns. Here is where the farmer's wife can not only tell how but can do much to help. I can not see that it in any way detracts from a woman's modesty to not only know how but to take the management of the farm in her own hands when left alone and with a family. Don't take the children to town, try running the farm. You will gain a stock of good health that will last through many weeks of confining house work.

To the wives that have to chop the wood let me say, try driving a team on the farm, while the husband does the chopping, and see how much easier.

You may not all believe that you could go into a crowd of society people in town and it would be difficult to pick out the farmer's wife who was such a tom-boy as I have described. She probably reads as much and is as intelligent, as any of them. She may not be able to speak German or Latin, but she can tell you all about the big international shows, bank guaranty, anti-injunction, and a bear hunt in Mexico.

If I were running a farm I would begin the day right by getting up first in the morning and building the fires, making just as little noise and dirt as possible. Really I think a man has more self-respect if he is up in time to answer the first telephone call, than to have his wife answer it and say, I will see if John is awake yet.

Next begin the week right by helping get the washing machine in place and if the water has to be pumped by hand, helping a little with that. Your wife will have time to get you a better dinner and will wear one of Samantha Allan's smiles when you come in to eat it, if the washing is all done and the house tidied up.

Begin the month right by giving your wife a little allowance, we will say $5.00 or even less, if your habits correspond.

Give her about what you spend each month for incidentals, as the item goes in your farm book-keeping. She will know what to do with it, and if she doesn't, she isn't fit to be your wife and you shouldn't have married her.

Your wife cannot help but feel the enjoyment you get out of a good cigar on a gloomy Sunday, when the magazines have all been read, but she would be even happier if she had in her purse the equivalent of those smokes in money.

If I were running a farm I would begin the year by making some good resolutions and being sure to stick to this one, come to you meals on time. This is one of the farmer's wife's greatest sorrows.

Don't think you must take just one more look at the stock or plow, one more row of corn. Provide a dinner bell and come when you hear it.

During the winter the next year's work should be talked over and planned, so the very day that ground is in condition to work you know just how to begin. Select your seed corn sometime in October and this can be tested in the winter. See to it that there is a year's wood up and the summer's meat cured and put away.

There is one item I forgot to mention, and that is at the beginning of winter be sure to go shopping with your wife and make great preparations for Christmas. Spend as much as your financial condition permits and don't forget that "It is more blessed to give than to receive."

About this time the year's reading matter should be selected.

In the latter part of the winter I would see to repairing the farm machinery, get the plows and disc sharpened and save the precious time that is wasted by some farmers waiting at blacksmith shops when everybody wants their work done the same day.

See that the yards and sheds are all cleaned up and right here let me say that the easiest and by far the best way is to keep the spreader near the barn and haul out the manure as it is made. This will save much time and is more beneficial. By this I mean much of it is hauled at idle times. A wagon box spreader can be bought for $60 and is all right, and the stock and the wife would both be happier for having these fly incubators removed.

I would prepare my fields for corn in the very best way possible, as much of the cultivation of corn can be done before and soon after planting. I would not be opposed too much to new methods. I believe the surface cultivator could be more generally used to advantage. In planting corn don't forget to plant pumpkins as they are a very healthful and economical feed.

Don't be afraid of straining your land, take good care of the fertility and the strain will never be noticed.

I would practice diversified farming in this locality and aim at the improvement of domestic animals.

Strive to grow better beef, pork, mutton and horses by improved methods and at a greater profit.

I would not envy a more prosperous neighbor, but try to imitate his methods.

Provide a good family orchard, not a commercial one, also enough small fruit that the family can have an abundance.

Keep a King road drag and use it at the right time, thereby having good roads to use as well as the blessing of your neighbors, who travel a greater distance to town.

Another thing I would do is to insist that the law governing legal fences be a hog and sheep fence as well as for cattle and horses.

If I were running the farm no farm machinery would be left in exposed places. It was not made to decorate the fence corners and yards. This is profitable to the implement dealer but not to the farmer, and a *woman* would never have *worn out* machinery in conspicuous places.

There is one advantage the farmer has and that is, he is never out of a job. There is always something to do and something that is really worth while.

And last, but not least, don't sell your farm unless you have no use for it at all.

HAVE THE PRINCIPLES OF AGRICULTURE A LEGITIMATE PLACE IN OUR PUBLIC SCHOOLS?

A. P. HUGHES.

(Before Poweshiek County Farmers' Institute.)

In considering the above subject we must not be unmindful of the fact that it is occupying a large place in the thought, not only of this, but of other countries, some of which have realized its importance long before the contracting area forced it on the attention of this country, notably England and Germany, to which countries we might now well look with profit as to the best means to employ to interest our young manhood in the noble occupation of tilling the soil.

In seeking a solution of the question it is well that we consider the object of all schools. The cry that goes up today all over the land is for education—it is demanded in all walks, the demand being for better brains, brighter brains, directing brains. The question arises, therefore, "What is education?" One replies that it is our experience from birth to death and is never complete. This is no doubt correct, but education in the abstract is the development of the facultuies of the mind which gives a distinctive force to the individual; education is the steam by which the mental energies are furnished with force, education gives to mind clear and vivid conceptions, stimulates its energies and prepares it for long and vigorous exertions. It enables one to form a correct estimate of life and its purposes and developes the constructive and thinking capacity. Education is sometimes confounded with information. Some have the idea that an educated man should be capable of expressing an opinion on any and all questions, but in its truest sense, education is not only the acquiring of knowledge but is the art of learning how to use the gifts with which we are endowed.

Understanding, therefore, just what is meant by education, it is important that we study those of whom we are the trustees. Admitting that in the days of development, when this great state was in semi-wild condition, the occupation of farming was not without its hardships, and I am going to be frank with the older members of this institute and say that I trust they are not guilty of the indiscretions of their fathers, when he said to them that he hoped they would not have to toil and slave as he had. No doubt the old gentleman was well meaning and thought he had your best interest at heart, but when he said those words he planted the seed of unrest in your mind and turned your attention to other thoughts than farming. He taught you that farm work was drudgery and sought to fit you for some more elevated profession. I sincerely trust that the fathers of today do not sow such seed of discontent in the minds of their children. If they do, small advantage would result from introducing agriculture in our public schools.

Of what particular value are our rural schools, and graded schools, for that matter, to the youth of the land in the way of fitting them for rural life? Rural schools are taught by inexperienced girls from eighteen to twenty-five years of age, who teach, not because of their special fitness or desire, but because they have not yet had an opportunity to marry—and they all prefer a dude from the city to a stalwart, manly country boy. For the most part the teachers have no sympathy with or interest in farm life. As at present taught the rural schools tend to drive the boys and girls away from the farm, whereas, one of their missions should be to teach at least the primary elements of agriculture. The same may be said of the graded schools. After a boy has spent four years in a graded school what is he worth on the farm? The primary object of the graded school is to fit for a collegiate education, and as a general rule only one out of three hundred ever reach college, and yet the state spends millions for that small percentage. Would it not be better wisdom to spend, at least a part of that sum, for the equipment of a centralized school devoted to the principles of agriculture, taught by teachers who make teaching their life profession and who would send your sons and daughters back to their homes thoroughly imbued with the importance of agriculture and with a knowledge that will enable them to engage in the work with pleasure and profit.

The work of these schools could be supplemented and augmented by the co-operation of the homes. No plan for encouraging agriculture can attain large success unless it includes provision for instruction in horticulture and garden methods. As an ideal the public schools should provide the instruction and the parent direct the training. At present neither school nor home is fitted for the task. A successful summer school of agriculture was conducted by the Massachusetts agricultural college last summer, and one is being planned for New Hampshire this year, and no doubt other states will follow.

The education of the young men and women of today must be broader than was the education of their fathers and mothers in order to meet the problems of advanced civilization, and this education must be moral and social as well as intellectual. It must be the sort of education that will favor new social ideals and enable farmers to work together and stick together in their various co-operative undertakings. The farmer's strong individualism, combined with rural isolation has unfitted him for the work of organization, and while other lines of business have been organized, systematized and syndicated he has remained largely an individual. The work of the secondary or agricultural schools would remedy this by an enlarged conception of the importance of farming as related to cooperation.

As a result of the benefits of teaching agriculture in public schools, I desire briefly to call attention to the work done in Page county, as told by the county superintendent in the "Iowa Year Book of Agriculture." The work began in 1907, at a county educational rally. Prof. Holden was present, and in talking to the rural teachers suggested that it would be a good plan for the strongest and most successful teachers, thoroughly interested in the work, to meet later and make definite plans for work that spring. The county superintendent selected fourteen of his best teachers who met with Professor Holden, who entered the room with some corn stalks under his arm. Together they spent several hours planning for the work to be done. The germination test box was explained, and before leaving every one present had caught from Professor Holden the spirit that is proud to be seen carrying corn stalks. They took this spirit back to their schools, and to judge by results imparted it to their pupils. In all of the schools seed corn tests were carried out and work along other lines inaugurated. One day of the county teachers' institute was set apart for a report of the work done. There was an address by Professor Holden and some actual milk testing. The reports of the teachers were interesting. One reported that his boys had walked five miles in a snow storm to secure the sawdust for the germination boxes; another reported a boy who had used his lap robe to save his box from freezing, and another told of a girl teacher who had gone back to her school after supper to build up the fire to preserve the even temperature of the room. Patrons of the schools, who had been inclined to scoff at first, have become enthusiastic advocates of the work. Germination tests in the schools resulted in germination tests at home, which enlarged the knowledge of the older farmers. As a result of the reports of the teachers, practically every teacher in the county caught the spirit and were anxious to take up the work. They realized that it could be done, that the children enjoyed the new world it opened up to them; that untold good would result from it to the neighborhoods in which they taught. In the fall work was taken up in regard to harvesting and caring for seed corn. The pupils were furnished with circulars from the state college, and it was suggested that each child go into his father's field and select the best ear of corn he could find and bring it to school, where it would be labeled and hung up to dry in the approved manner. Very often, when the county superintendent visits the rural schools the first question asked is, "which ear is the best?" Before planting time each school will have a germinating test, using the corn selected by the children. In addition to this, the superintendent has purchased a milk tester and a complete testing outfit, which will be passed to different schools, both in the country and towns, who wish to learn how to test milk. There is a wonderful field for work in this line and the general weeding out of worthless cows could be secured though the schools much more quickly and effectively than in any other way. Three thousand tuilp bulbs were distributed among the schools of the county, which were planted by the pupils. Tulips were chosen because they were sure to blossom before the schools are out in the spring, and also it was hoped a bright tulip bed in every school yard would help in the campaign for better and more attractive school houses and grounds.

This account of the work done in Page county is introduced as a strong argument in favor of agriculture in the public schools.

Theory is not what is demanded at present. Superintendent Riggs is no doubt sincere in his contention for secondary or vocational schools, but by his own admission it will require several years before his plan will bear fruit in the rural districts. What we want is a plan by which the schools as at present constituted can be utilized in teaching the rudiments at least of agriculture. There is no question as to the necessity of such instruction, and I believe the time is ripe for its introduction into the rural and graded schools right now. What has been done in Page county can be done in Poweshiek county, and if our teachers take hold of the matter as did the teachers in Page county our rural schools would at once spring into importance, and there would be less desire on the part of the pupils to enter the graded schools. Teachers can easily fit themselves for teaching primary steps in seed life and growth and with the assistance of the homes all would be surprised at the progress the children would make and in the added attendance and interest in the rural schools. Farmers owning land adjacent to school buildings could be prevailed upon to donate sufficient ground for a school garden, wherein the children could spend an hour each day in pursuit of knowledge that will direct their attention back to the farm. These school gardens could be profitably introduced in the graded schools in the towns, and much would be gained by the pursuit of studies aided by actual experience in cultivating plant life.

The demand for this sort of instruction is acknowledged by the bills in the congress and state legislatures favoring some plan of introducing agriculture in the public schools, but for the most part the plans suggested are complex in their workings and do not reach the vital question soon enough to be of much benefit to present day pupils. What we want is active interest on the part of teacher and pupils in present day facilities and a will to do the work as best they can. Let the teachers take advantage of every opportunity to post themselves and interest the children in the work along with their other studies, with a day given to the subject by the county teachers' institute.

Dr. A. C. Trude, director of the experiment station of the department of agriculture, Washington, D. C., says that there must be and will come a general improvement in the country elementary schools. I think we should do something to promote the teaching of the elements of agriculture in the public schools and through the association of agricultural colleges and experiment stations, working in harmony with the national experiment station.

There has been introduced in the lower house of the national congress by Representative Davis a bill to co-operate with the states in encouraging instruction in farming and home making in agricultural secondary schools, with branch experiment stations, instruction in the non-agricultural industries and in home making in city secondary schools, and in providing teachers for these vocational subjects in state normal schools.

Just before his death Ian MacLaren said: "I'll tell you, the problem of Iowa is not a political or industrial one—it is the problem of the bairns scattered over our prairies." It is well, at this time, to carefully consider this bit of good advice. If the training of our boys and girls does not bring out the very best there is in them; if it does not fit them to deal intelligently and successfully with the problems they are to meet; if it does not fit them to make the best use possible of the soil and climate; if it does not teach them in fact the ennobling principles of agriculture, then it is time that we made it such.

AGRICULTURE IN RURAL SCHOOLS.

MRS. MAX DAN.

(Before Kossuth County Farmers' Institute.)

Every thinking man and woman will concede that the development of the country schools is not in proportion to the development of the country in other lines. The country school is practically the same today as it was twenty years ago, with perhaps a few exceptional cases. In a great measure this is the fault of the farmer, though a mistake of the head rather than of the heart. We have been so occupied, some of us, adding to our material possessions, some of us striving to meet our obligations, that we have given the school little attention, beyond keeping the children at school and supplying the necessary material. It is only recently that agriculture as a life work, has received much consideration. It was regarded as a means, not an end. Parents were content to work the farm long enough to secure a competence that would allow them to move to town, or perhaps remained on the farm to provide the means to educated the sons and daughters, that they might escape the drudgery of the farm, forgetting that work is drudgery only when it is work we do not like to do, be it on the farm, in the office, shop, or school. But a reaction has set in, a new era has begun; we realize that the farmer as the main producer of wealth, needs a special training quite as much as a follower of a profession or a trade; that it takes skill to make a success of farming on high-priced land; and that to be a producer of fine crops and fine animals is an object well worth aspiring to; and since a very small per cent of the farm boys ever go to college, we must look to the rural schools for their training.

With the country schools as they now are, all we can hope to do is to arouse the ambition of the pupils and patrons that they may desire a better knowledge of agriculture; if this can be done, fewer and better equipped schools will follow. We have heard it said that no child can be taught till it has a disposition to learn; this is also applicable to children of a larger growth and rural schools will be made of more practical value to farm boys and girls when the majority of farmers demand it; and they will not demand it till they feel the need.

We believe neighborhood organization would be an aid to cultivating this disposition to learn in the farmer. Let the teacher, aided by a few of the most progressive farmers, form a club, the aim of which shall be a larger and better supply of agricultural knowledge. Persuade every man, woman and child in the neighborhood to be a member and participate in discussions of agricultural problems. The best journals devoted to farming interests are doing an inestimable amount of good in awakening men and women to their responsibilities and opportunities as tillers of the soil. If all would read, assimilate, and then put into practice the information these publications are disseminating an epoch of remarkable progress would follow. Would it be amiss to compare the reading element among farmers to the parable of the sower? He who reads with the purpose of gaining and applying knowledge would represent the fertile soil on which the seed fell and brought forth abundantly; those who read understandingly, but are not enterprising enough to carry out the ideas thus gained, would correspond to the thin soil upon which the seed fell, sprang up, but straightway withered; lastly, those who read uncomprehensive or not at all suggest the wayside upon which the seed fell and was trodden upon or devoured by the fowls of the air. We believe the last two classes represent a majority, they are satisfied with present conditions, giving no thought to improvement. It seems probable that the neighborhood club would be a means of getting this class in touch with up-to-date ideas. Scientific feeding, improving plants and animals by selection, a study of the noxious weeds of the locality, and the best and easiest way of eradicating them, insect enemies, plant diseases; beautifying the homestead, and farm sanitation are a few of the topics on which the average farmer has everything to learn. Books on these subjects and articles taken from reliable journals would furnish interesting and instructive reading at club meetings and supplementary reading at school. Pupils would become familiar with terms commonly used in scientific agriculture, and enable and encourage them to read these publications intelligently, and wouldn't the study of these and similar subjects develop the intellect and broaden the mind quite as much as reading ancient fables and myths or studying latin and algebra?

The country school offers the best facilities for nature study, and would help the little folks see the attractive side of farm life. Get them familiar with birds that frequent your locality, learning to distinguish them by name would be fascinating to both large and small pupils. The same can be said of insect life and elementary botany, and instead of adding to the work of the teacher it would lighten her work by making reading and language study interesting. The bugbear of every country school boy is language work. The most important study and most neglected. Surely in having something interesting to say, the saying in suitable language would be easier and composition shorn of some of its terrors.

In forming the club the most capable should be elected as officers and serve not in a spirit of patronage but of comradeship. Energy, diplomacy and unlimited perseverance, and the two proverbial bears (bear and forbear) will be indispensable to insure success. It will be hard work for pulling up stream is harder than to drift, but powers grow with exercise and we should be willing to aid in working out our own salvation. If it is right thinking that will shape future destiny of farm life, let parents and teacher co-operate to put the farm boys in line for doing things in the right way and let parents keep the pace. Let every progressive farmer and every teacher interested in the advancement of agriculture do a little missionary work along this line, and since a "little leaven leaveneth the whole lump" we see in the near future consolidated schools with agriculture and domestic science taught as regular branches, and the country scholar placed on a fair footing with the town scholar. Meanwhile let us not despise small beginnings, and if the country school teacher can aid arousing the boys' ambition, help him to see that there is something more in farming besides hard work, start him in the way of reading, thinking, investigating, until he acquires the habit, she will have builded better than she knew.

DRAINAGE.

FRANK FORBES, NORTHWOOD, IOWA.

(Before Worth County Farmers' Institute.)

It is both profitable and interesting to study the peculiar effect of water upon soil, and upon vegetable life in the soil, but the scope of this paper will not admit much discussion of that subject. It must be enough to say that plants can not feed on the soil unless water is frequently supplied; neither can the plants valuable in Iowa farming feed upon the soil unless the water is promptly removed. This problem of getting the water to the soil, and then getting it away, must be constantly in mind when studying drainage in any of its phases.

In some countries the soil is supplied with water by irrigation, in which case the amount supplied, the time applied, and place at which it is applied are easily regulated, but in this country the water is supplied by rain, which comes unbidden and uncontrolled, and although one of the greatest of blessings it often becomes a source of great injury. It has been truly said that it falls on the just and the unjust alike, but after it falls, no rule of fairness is observed, and it may bless one man and injure his neighbor.

It serves its purpose where it falls, and there is no place where it can be said that more rain falls than is needed, but where the rain fall from one place is allowed to accumulate at another, or where it is not allowed to flow away, it becomes at once a source of injury. So the bare question is, how shall we remove the water after it has served its purpose without damage to other soil? No method has yet been discovered that is practical except to allow it to flow by force of the laws of nature. But if allowed to flow on or near the surface it injures the soil along its path, while if allowed to flow a reasonable depth below the surface no harm is done, and the effect is even beneficial to the soil above its road.

So we may say that the first requisite is to get the water down to a safe depth below the surface. If the water is allowed to stay on the soil more than one day, even where it originally fell, it injures farm crops; for that reason we may add: *Get it down immediately.* It will do but little good to get it down unless a way is provided by which it may flow away. This way must have slope enough to cause the water to flow. and be large enough to hold the volume of water to be moved and at the same time keep it at a safe depth below the surface of the soil. The volume of water to be moved, and the slope of the waterway, or drain, as we call it, are usually items which are fixed by nature and both affect the required size. So we cannot judge of the required size unless we know the slope and the volume. Then here is another rule: *Ascertain the available slope of the drain and the volume of water to be moved.*

When the drain is constructed if there are places where the slope is greater than at others the water will flow more rapidly at those places, but the water will not get away any more rapidly than it flows at the flatest place, and so we should make the drain of uniform slope if possible. It is true also that crooks and bends in a drain obstruct the flow, and a drain should be made in as straight a line as possible.

Open drains when constructed often become obstructed by flowing silt, falling turf and growing vegetation, and besides they are a serious annoyance in cultivating land and destroy a considerable portion of land that should raise good crop with less labor in farming. Where it is possible to use covered drains, they are less liable to obstruction, the land is saved from loss and waste, and good crop is grown where with an open drain there is nothing but an unsightly hole with weeds on its banks. Then let us make the rule: *Always use a covered drain if possible.*

Nature has wisely prepared the surface of the earth so that in most places there are plane of more or less spherical surfaces with natural slope in some direction. These sloping surfaces intersect each other in all manner of ways, but the intersections of the lower edges make continuous water courses toward some river or natural body of water. These natural courses are liable to become overflowed, because the water naturally seeks them. Water will not cross these courses to seek a drain somewhere on the surface sloping to it. For that reason it is needful to locate drains near the natural water course and these of necessity are often crooked and meandering, but there is no reason why the drains on the sloping surfaces should not be in straight lines, parallel with each other, and it is much better to have them so as it gives uniform results and systematic work. Then we would say: *Locate the main drains along the natural water courses, but make the lateral drains as near as possible parallel with each other, even though you disregard slight undulations of the land.* Lay them out so they will follow the line of greatest fall, only modified to a reasonable extent to keep the lines parallel and avoid acute angles at the junction.

The law of this country gives every man a right to have the water flow from his land onto the land of his neighbor in its natural course, in natural quantity on the surface of the ground or in a natural channel. This is a wise and just law, but often the outlet thus afforded is not deep enough to give perfect drainage. Thus it is often necessary to co-operate with neighbors to get good results. This is not always possible, and our legislature has enacted a law whereby a man may force a drain across his neighbor's land, and this law should be used whenever necessary.

So far in this discussion we have only considered general conditions and what things it is proper to do. That part is important as it gives a starting point from which to discuss the more important question, How best to do the proper thing? That is a more difficult task, and in undertaking it I will only profess to give the result of my observation, experience and study. It may well be asked:

First—What is a safe depth below the surface? I would say from three to four feet. Sometimes it is necessary to go much deeper in order to procure a uniform grade, or for some other reason. As a rule that makes it better rather than worse. The only objection is the additional cost. There is a constant temptation to save money or labor by shallow tiling and ditching, but it will be a great mistake if you yield to the temptation. It is very easy to waste a hundred, or even a thousand, dollars, by laying a string of tile too near the surface. This is particularly true with large tile. A 12-inch tile should be laid four feet deep, if possible. Sometimes it is impossible on account of poor outlet or slight fall to get a drain three feet deep. In that case do the best you can. I have seen excellent results with a depth of a foot and a half at the outlet, or at the upper end. Such a drain will not drain a large area, but will do good work for a small area. If it is a main drain it will need lateral drains where otherwise they might not have been needed, and if a lateral drain, other laterals near; in some cass two or three times as many would be needed if the drain were deeper, so it will prove in the end very much more expensive to drain land with shallow drains than with deeper ones.

Second—What is sufficient slope? In measuring slope engineers usually use one hundred feet of drain as a unit. That is to say, if an engineer should tell you that a drain has a slope of fifteen-hundredths, he would mean fifteen-hundredths of a foot to every hundred feet. The fall is usually expressed in hundredths of a foot rather than in tenths or inches, because it is convenient to use the decimal system, and we need a small subdivision, as we often have a very small amount of fall to apportion to a very long drain. Good drainage can be secured on a very small fall. Good authorities say as low as one hundredth, or even on a level, but the less the fall the more expensive the drainage. In this country I consider a slope of from ten to twenty-five hundredths a good practical condition for such drainage as will not be unusually expensive. This question of slope must always be considered in connection with the size of drain and volume of water, and I will give some tables in connection with those subjects that will involve all three questions.

Third—How can we compute the proper size of a drain? It is absolutely necessary first to know the volume of water and the slope of the drain. In measuring the volume of water to be moved you must know the area to be drained, and the amount of rainfall.

The area can be carefully measured if you like, but usually a rough estimate will answer every necessity. Then with the average rainfall known the problem should be easy; but some of this water sinks to subterranean currents, and does not reach the drain, and besides that the rain does not fall at a uniform rate and it must be cared for as soon as it comes. So we must know the greatest rainfall likely to come in any one day, and the portion that is likely to reach the drain. It is safe to count that practically all of the water falling on the untillable land should be carried by drains. The portion coming from the tillable land depends largely on the surface and subsoil and is largely of necessity a matter of judgment. Steep hills with clay subsoil furnish more than gentle slopes with gravel subsoil. Hills with sand or gravel subsoil absorb the water and give it out in seepage at the foot of the hills; but in this case it comes to the drain much more slowly. In computing size of drain I usually compute tillable land sloping to the drain at about one-fourth the area of untillable land, but this can not be considered a safe rule for all cases; sometimes it should be more and sometimes less. We occasionally have a rainfall of two inches, and on rare occasions, like June, 1864, and May, 1902, we got four or even five inches. But good authorities use a maximum of one inch for a basis from which to compute the size of tile. In ascertaining the slope of the drain you must measure and find how much lower the bottom of the drain is at the outlet than the bottom of the drain will be at the upper end, and divide the amount by the length of the drain. For the purpose of computing the size of the drain, this measurement can be made by any intelligent man with a carpenter's level. As to measurements in general I will speak in another part of this paper.

After you have learned the slope and the volume of water to be moved you will be in position to judge of the kind of drain to make. You may find that a tile large enough to drain the land would cost more than you can afford. In that case you will find an open ditch less expensive but not so good. Small sized tile should never be used on flat slopes nor for large areas. You must have the drains large enough and near enough together to carry away a large rainfall before it drowns your crop, or your money is wasted. There were thousands of rods of perfectly working tile in this county last year that drained the land splendidly, but left it bare of crop because it was too slow. This was a waste of money. If you compute the gallons of water to be moved in a day, the following table will help you to compute the size of tile needed:

TABLE SHOWING NUMBER OF GALLONS PER MINUTE CARRIED BY DIFFERENT SIZES AT DIFFERENT SLOPES.

Size	Slope .12	Slope .25	Slope .50	Slope .75	Slope 1.00	
4	36	52	76	92	108	
5	54	78	111	134	159	
6	84	120	169	206	240	
7	104	160	220	280	330	
8	144	208	304	368	432	
9	232	230	470	570	660	
10	267	377	463	655	803	
12	470	680	960	1,160	1,300	
14	830	1,000	1,400	1,800	2,100	
16	1,200	1,600	1,900	2,800	3,300	

This table is prepared from figures given in surveyor's tables of F. Hodgmann, and credited to catalog of Bennett Sewer Pipe Co.,There are, however, tables prepared which give reference to acres rather than gallons, and I believe they are better for the ordinary farmer than the above. When you know the slope of the drain and acres of untillable land to be accommodated you can be reasonably safe in relying on these tables. I will give a table here adapted from the tables of Wells and Carpenter, and published in Hodgmann's Manual of Surveying:

Table showing capacity in acres of drain of different sizes and slopes:

OPEN DITCH, SIDE SLOPE 1 TO 1.

Slope	3 ft. bottom.		4 ft. bottom.		6 ft. bottom.		10 ft. bottom.	
	3d.	6d.	3d.	6d.	3d.	6d.	3d.	6d.
.03	1,600	4,000	2,000	5,000	3,000	8,000	4,000	12,000
.05	2,000	6,000	2,300	6,500	3,500	10,000	5,000	15,000
.08	2,600	8,000	3,200	9,000	4,500	12,000	7,000	21,000
.12	3,500	10,000	4,000	12,000	5,500	16,000	8,500	25,000
.15	4,000	15,000	4,600	16,000	6,200	20,000	9,500	30,000

TILE.

Slope	4 inch.	6 inch.	8 inch.	10 inch.	12 inch.
.05	0	0	0	0	40 a.
.07	0	0	0	30 a.	47
.10	0	0	21	37	56
.12	0	0	24	42	65
.16	0	13	28	48	74
.20	0	15	30	54	81
.25	6	17	34	60	90
.33	7	18	38	65	107
.40	7	20	43	74	117
.50	8	23	48	84	132
.65	10	27	56	97	154

For instance, if you have an untillable slough of ten acres with forty acres of ordinary tillable land draining into it, and find that you can make a drain with a slope of only five hundredths, you will learn from the table that nothing smaller than a 12-inch tile can be used, and that will be good for forty acres or its equivalent in wet land. You have ten acres of slough and forty acres of dry land, equal to ten acres more, or twenty acres of drainage, and your 12-inch tile will do in like manner; if your slope is seven hundredths a 10-inch tile will do. If it is ten hundredths, 8-inch will do; if it is forty-hundredths, a 6-inch will do.

Third—How can a uniform slope be secured? The line should be carefully laid out, and a stake set at the end of every hundred feet, and the depth of cut computed at every stake. A cord or wire should be stretched tightly eight feet above the required bottom, as shown in the following cut. A light measure eight feet long should be used on every foot when cutting the bottom of the trench. A line of targets will answer the same purpose, but are not as accurate or handy as a line. It is *absolutely impossible* to do good work by what is called "water level," or by a straight edge and carpenter's level in the trench. The computations of cuts can only be made by measuring the elevation at every stake. This could be done by a carpenter's level, but the inconvenience in making the many adjustments make it unprofitable to do so. A surveyor's level can be purchased for a small sum, and any farmer's boy can learn in an hour's time to measure elevations for all ordinary drainage work. I wish to speak briefly in closing about the drainage district law, but before I pass to that I will devote a little space to the general subject of tile draining, and must be content with a few injunctions and expressions of opinion. Drawing surface water off from land is good as far as it goes, but there is not much profit in it even though done at small cost, because the land is still wet. The great profit comes when you can raise big crops on land that was once a waste place, and this is true even though the cost is very great. Then it is wise when you begin to tile to plan for complete and thorough drainage. Do not despise a small tile. Sometimes you may think your tile is too small when the trouble is that it is poorly laid. It costs nearly five times as much to put in 12-inch tile as it does to put in 4-inch, and in many cases five lines of 4-inch tile would be very much better than one of 12. Do not spend too much time "fussing" with the bottom of your trench. If it is cut accurately as it should be the "crumbs" do more good than hurt. If tile is laid in sand, cover all joints thoroughly with clay or black soil. If in quicksand, lay a few rods and let the water drain out before you go any further. Protect your outlet against caving earth by a stone wall, and against animals that would harbor in the tile by a Tenold protector. (I would not use this paper for the praise of a special article if there was another in the market in its class. This article stands alone and is an entire success.) I do not feel competent to advise as to the merits of cement tile. It seems that on large sizes when made on the ground in the field where used there is considerable saving in cost, but the relative merits of clay and cement are yet in dispute, and I am as yet unconvinced of the merit of cement. The ordinary cost of putting in tile drain where the hauling is not more than ten miles may be roughly estimated as follows: 4-inch, 65 c per rod; 5-inch, 80c; 6-inch, $1; 7-inch, $1.40; 8-inch, $1.80; 10-inch, $2.50; 12-inch, $3.25. These estimates are actual cost without mishap. The danger of floods, quicksand, hardpan, bad roads, expensive handling on soft ground, etc., makes it difficult to get contracts for these prices, but if you have no mishap they will about cover cost for ordinary depth in this county.

Now, what about the drainage district law? Yes, it is a good law. It will be an untold blessing to Worth county more and more as the years go by. It may need some changes, but in the main it is a good law. It is not strange if some mistakes are made in the first cases; it is probable that more yet will be made. My experience both as a lawyer and as an engineer has given me an opportunity to see where mistakes are apt to be made, and I will here point out some of these dangers: If an open ditch is specified on your land it will be a mistake if you do not file a claim for damages. The right of way is part of the cost, and justice cannot be done unless every man files his claim and a fair (not large) amount is allowed thereon. When a notice is served on you that an engineer's report is on file, it will be a mistake if you do not examine it. If you find something you do not like it will be a mistake if you do not file objections in writing, and a bigger mistake if you get angry about it. If the report does not recommend an outlet for you, it will be a mistake if you do not ask for one (that is if you want it and are willing to pay your share for it.) It is often wise for the engineer to leave that question for you to decide. When the petition is filed for the drainage of a special piece of wet land, it would be a mistake if all the land dependent on that body for a drainage outlet is not included in the district. It will also be a mistake if any land is included in that district that is not dependent on that body for a drainage outlet, even though it is in the "water shed." When the commissioners classify land and assess benefits, it will be a mistake if they judge by results attained rather than by the amount of money expended. I believe the supreme court will some time decide that benefit to a piece of land is measured by the money spent for that piece of land, let the result be greater or less as it may be. It is a mistake to make drains too small, and also a mistake to make them too large. It is a mistake to force drainage upon people against their wish at an unreasonable cost, and also a mistake to allow an obstinate man to block the progress of his neighbors unreasonably. It will be the greatest mistake of all if all are not good-natured and friendly with your neighbors and with the engineer and the officers. If you all try to help each other you will succeed.

GOOD COUNTRY ROADS.

C. C. DYE, LINEVILLE, IOWA.

(Before Jefferson County Farmers' Institute.)

To have a good road in any country, in the first place we must have drainage. You will all agree with me there. Because a road must be kept dry, or it will be soft.

I have a system of road work, which I have followed for the last five or six years, and if you will watch me closely I will explain this all to you, in giving you my system. We must have a system by which to build our roads, or we never can have good roads.

One year I graded a lot of road from twenty to twenty-three feet wide, and had it in nice shape and expected next year to widen it or the next man would; but what did he do. He started about six feet on the outside of my ditches and ran the dirt into my ditches and filled them, and then he had a thirty-three to thirty-five foot, flat road. Both his work and mine thrown away.

I know of no better way to give my system of road work than to tell how I worked half of a township for three years, then I will tell how I fixed and maintained certain pieces of road.

Five years ago I took one-half of the road work in Jefferson township, Wayne county, there being about thirty-six miles of road in very bad shape, ditched up, and culverts in very bad shape and only about forty poll taxes and $380. to do this work with.

As early in the spring as I could get upon the ground while it was too wet to plough in the field, I took two plows, right and left, went all over the roads, plowing furrows from twenty to twenty-two feet apart on the side of the road. Sometimes when the road was in trough shape I plowed as close as eighteen feet. And low places and near culverts where I had used scrapers, I plowed three or four furrows on a side. By the time I got over the roads I knew just what had to be done and how to distribute my work. I told the people that there wasn't money enough to fix the road right and I would have to call upon them for a little donation work. As soon as it was dry enough to scrape I went on the road with a small crew; I fixed the culverts and wherever I felt I had time filled in ditches and threw up low places and got it in fair shape for the grader. In June after the ground got in shape and these sods had rotted, I went to work with the grader. I mostly put on ten horses, the people responding nicely. Those who did not donate, we left their roads ungraded. In the fall some wanted their roads graded again, and donated the work. I got $150.00 donation work, nearly all the roads graded, most of the low places and the roads in fair shape. The next year I went on the roads with the plows and plowed one furrow on each side of the road, then fixed culverts and put in the time throwing up low places and filling large ditches. I then went over the road with a grader asking a little donation in some places where the roads needed a little more work. I got $50.00 donation and the roads in fine shape. They were from twenty-three to twenty-five feet wide and from sixteen to twenty-four inches highest in center, and in nice oval shape. The next year I went on the road and fixed culverts and places where water had made some large ditches and scraped in the sand that lodged in the low places at the foot of the hills. When the ground got in good condition I took two King drags, improved as the ones I have shown you, a right and left hand one. I hitched to them so they ran at an angle of 45 degrees, commenced at outside of road, and when I came to a hill where the banks needed cutting, I hitched near the end, so it would cut the bank that was to move the ditch over from the road. We would go a few rounds, one drag would cut up hill and the other down. Then I would drag the center of the road toward the ditch and it would leave the hill in fine shape. I would keep on and go just far enough so I could get back by quitting time and would have eight or ten miles dragged, and I kept on until I was over the road. It cost from seventy-five to ninety cents per mile. Later on after the weeds had started some I went one round with the grader and let the dirt settle and run it in with the drag. I left the road in fine shape and about $40.00 in the treasury, and did some heavy hill and bottom work.

The other half of the township had been worked by one man. He worked in a haphazard way, not using the plow or drag much, and people told me $1,000 would not fix his half of the township, in as good shape as mine. A young Mr. Massey has taken up the work where I left off, using my plans and some of his own, which are better, and the roads are still improving.

I will now take up stretches of road that I have fixed, show by diagram, and prove the assertions I made at the start.

Six years ago a steep hill east of my house was in a trough shape, and I could hardly haul my feed up it in the spring. I plowed the sides and threw it in with the scraper until I had it highest in the middle, and about twenty feet wide. It took about one-half day, and I think it has had a light grading since. Four years ago I commenced dragging it, and quite a large ditch had got on one side. I plowed a few furrows and then dragged right down in the ditch, and cut the sides with the drag. It is now about twenty-five feet wide, and no ditch. I also widened it by running against the bank with the wagon wheel, while driving to the field, using it for a lock and wear out the bank. I also threw up the sand at the foot of the hill until it was three feet higher and the hill is out about two feet, a difference of about five feet, and I am sure it hasn't cost over two days' work.

Another hill, near my farm, thirty rods long, for about one hundred feet, was very narrow, and a ditch five feet deep, and there was a ditch two or three feet deep all the way down. I plowed eighteen inches off that narrow steep place, scraped it in ditch, moved the other ditch over four or five feet, leaving the hill in fine shape and three teams did it in one day. It is now in fine shape, and has had no work since, only a light grading or two and some dragging.

The ditch along the side was about five feet deep and one hundred feet long. I took long double-tree, put it on plow, put one horse in ditch, other on bank, left the checks unsnapped and had a man to lead each horse, went a few rounds, then put them on the usual way. It only takes a little while to plow in the road.

I have a hill west of my place, which I commenced to drag about four years ago. It was lowest in the middle. I had ten acres of ground to plow, which took me about four days. I hitched onto my drag with three horses, put the plow on it and started to the field. I commenced the road about twenty feet wide, a part of the way there was sod. I would bring the drag home and take it back every time I went. By the time the field was plowed I had an impression on the road, so the water took to the side of the road where I had gone with the drag. By the next spring the ditches were a foot deep and of course the middle was a foot the highest. I kept on dragging every time I went to the field and would set my drag into the bank wherever it would get mellow, and you know it always is in the spring, and whenever it gets wet and dries it slacks easily. It has had nothing on it but the drag and now it is twenty-five feet wide, twenty inches highest in the center. The elements did at least 60 per cent of the work. You may sight across the banks and the middle of the road is no higher than the banks, so you see the water has done the work and I smoothed up after it. I now drag from the center to the outside, that keeps every clod and pebble out of the road, and it is smooth as a pavement, also wears away the hill.

The two miles of road I keep up in fine shape around my farm. Three-fourths of a mile I have to go on purpose to drag it, and it takes about one day in the year to keep it up. The other one and one-fourth miles I never drag only when I go to the field, except in the fall sometimes I have no work in the field, then I drag it a few times.

You take a level stretch of road and you have to throw it up every year and every time it rains it softens it and lowers it, and the frost and spring rains soften and lower it.

In a hilly road the washing makes it higher where the wind blows, and if it is dusty, on a level road, it blows the dust away, and it is lower. Weeds and trash gather at the sides of the road and is hard to get away unless you run the grader and throw them out. Weeds and grass are harder to keep down on a level road and they grow more rank than on clay, hilly roads.

How I fix deep gullies that are from ten to twenty feet deep and the ditches at the side of the road, which have almost taken the road I cut the bridge down two to four feet or put in tube plow in the ditches, and lower the road and widen it. I leave crack near the end of the bridge so that water will run under the bridge and not wash the abutments. If the dirt lodges on the bridge, running across it with the drag runs it down the cracks and keeps it clean. This is quickly done and easily kept up. Make culvert with 2½ inch crack.

There was a bridge on a large gulley and the ditches on both sides of the road for seven or eight rods had gotten so narrow that it was almost impossible in wet weather to drive to the bridge. I spoke to the county commissioner about it. Told my ideas and he didn't like them, but told me to go ahead. I cut the bridge down three feet and plowed in the ditches, and lowered the middle of the road. It cost about fifteen dollars. You would hardly notice the slope. That was about three years ago, and it hasn't needed any work since.

Some years ago I plowed two furrows on each side of a hill road and I never got back there to work it. The ditches got two or three feet deep and the people were complaining that ditches would take the road. A Mr. Brown who took the road work and followed my plans told them he would fix it. He plowed some dirt for his men to scrape and went to the hill, put one horse in the ditch and plowed one furrow on each side of ditch and went one more round throwing the dirt toward the ditch from the inside, and went three or four rounds with a drag and had a beautiful road twenty-two feet wide, only costing one-half hours work. If those ditches had not been there it could not have been done for less than four or five dollars. You put the water in the right place and it will help to make a road. You drag such a road and hit the bank moving the ditch over, and the water will lower it, and in a few years you can get the ditches over far enough so they will not harm the road.

Wherever you find two low places requiring culverts, with a small raise between, if not too expensive, cut the raise down, using only one culvert where two would have formerly been necessary.

Six years ago there was a ditch ten feet and twenty feet wide, the people had filled it with logs and the water ran through between the logs, after every big rain they would settle and they would have to put on another layer of logs. I 'phoned to the county commissioner and told him that this place would have to be fixed; he said they would have to put in a bridge; I told him I could put in a fill and run the water down the hill for fifteen dollars, and he said for me to do it. I fired the logs that night and by morning they were burned out so I could commence, by evening I had it finished in fine shape, and it cost exactly fifteen dollars. It is there as it was the day I put it in.

Near this place was a forty rod hill, sideling, rough, and in the spring it was sprouty; there were rails and poles showing that people kept asking how I was going to fix it, and I told them I didn't know just yet. They said men who had tried to fix it had upset the grader, and could do nothing with it. I got there in the evening about four o'clock, with plow and three scrapers, commenced plowing on the upper side about four feet wide, and let the scrapers throw it over. I got the ditch about two feet deep, and took only about four hours to do it. A short time after, when I was running the grader I smoothed it up and made a fine grade of it, and left it in fine shape. It has had no work since to speak of, and it was in fine shape until the last year it is ditching out some and will soon be in bad shape, so it will have to be doctored all over again, when if a little bit of dragging had been done it would have gotten better instead of going to the bad. Some people work hills too wide. A man near here spent thirty dollars on a hill. He worked it about thirty-five feet wide, cut a ditch to run the water from the road into a man's pasture, and he left the hill almost flat. The next the water started down the middle of the road, and there was two ditches a foot deep, and you could hardly get up the hill. Four men wanted to donate enough work to fix two miles of the road and this hill was included. They hired me to run the grader. I said, "How do you want the hill fixed?" and they said to do it the way I wanted to. I said, "I will grade it about twenty-two feet wide," as I had to start narrow to get the middle full. I said to them, "you must not let the ditches take the hill, but keep moving them over until they get over to the ditches that cost the other man thirty dollars." They did as I said and the hill has been in fine shape until the last year; it hasn't been dragged, and is beginning to get a little rough. It only cost us a few hours' work.

Dragging now has a two-fold purpose. One is to keep the roads smooth and hard, the other is to throw up a grade. For the first, go one round in the center of the road when it is just dry enough so it will pack, and not stick to the drag. But to grade a road you must have it dry enough so you can move the dirt.

In the spring, as soon as the road is dry, I go one round the outside of the road, about an inch of the top is mellow and moves very easily. Then I wait until it mellows again, which it will do as soon as it rains, and dries, and I go another round in the same place, and drag this to the center. That way you save one round, as you can move as much as you can get from the outside in two or three rounds. and by not dragging quite all of this dirt away you can leave a shoulder and have the road hipped. Keep this up whenever the road is slacked or mellow and you will have a beautiful road, and no weeds at the side of the road. If you move all the dirt that is run in from the side of the road it will have straight sides and look like a house roof, and when it is slick, horses will slip and slide, and it worries them to get along. Along a hill road where the rain makes ditches, by dragging in the ditches it is easy to keep the road in a nice circle or hip shape. When the center gets high enough to drain well, always drag from the center out, and every clod and stone will be run out of the road, and the road will be as smooth as a pavement, and it looks nice and is delightful to drive over. If a light snow falls and is likely to melt soon, go one round with drag and run this snow off of the center of the road, and when the sun shines on it a little bit it will be as dry as ever.

In the spring of the year when the snow melts and the roads begin to thaw, take the drag and run the mud and slush off the road, and it will thaw out just as a point is dry where the snow has blown off.

If you will keep the sides of the road well dragged so the ditches will be filled in, in winter, the snow wlll blow off of the center of road and you have a nice place to drive with wagons and buggies, and snow will lodge at the sides of the road and will be nice for sleds and sleighs.

A few weeks ago I experimented with one hundred and forty feet of hill road, the ditch on about forty feet of the steepest part of the hill was three and a half feet deep and the rest was two feet deep. I took the plow and commenced at the outside and threw the dirt in the ditches. It was very hard and it took me one hour to plow the one hundred and forty feet. I commenced at outside again and threw the dirt same as before. It took twenty minutes this time, and I kept on the same until I had plowed it four times. It took two hours. I spent one half hour throwing the clods from the forty feet into the ditches and when I got through, the one hundred feet was six inches the lowest, and the forty feet was about one foot, and the cost was less than one dollar. The first hard rain that comes will melt the clods and clean out the ditches and I will give it a dragging and it will be in fine shape, and about one foot of the steepest part of the hill gone, and all together it will not cost over one dollar.

Commence right. Use a system, and you can have good roads with very little cost. Did you ever think of the difference of the cost between a narrow and a wide road, in making and maintaining it. A twenty foot road to the foot, there is about fifteen cubic feet of dirt; twenty-two foot road, eighteen cubic feet; twenty-five foot road, about one cubic yard. A thirty foot road, about thirty-six cubic feet; thirty-five foot road, two cubic yards; forty foot road, three cubic yards. See the difference. A twenty foot road is wide enough for a by-road where there is very little travel, and is easily kept up, and twenty-five to thirty, at the very outside, near the large towns and cities.

SPEECH OF HON. WILLIAM SULZER.

(The House being in committee of the whole house on the state of the Union and having under consideration the bill (H. R. 1438) to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes.)

Mr Chairman: For years I have been trying to secure national aid in the building of good roads throughout the land. National aid for good roads is demanded by the people, and the question will grow more and more important as the seasons come and go until the demands of the people are granted by the national government.

Good roads mean progress and prosperity, a benefit to the people who live in the cities, an advantage to the people who live in the country, and it will help every section of our vast domain. Good roads, like good streets, make habitation along them most desirable; they enhance the value of farm lands, facilitate transportation, and add untold wealth to the producers and consumers of the country; they are the milestones marking the advance of civilization; they economize time, give labor a lift, and make millions in money; they save wear and tear and worry and waste; they beautify the country—bring it in touch with the city; they aid the social and the religious and the educational and the industrial progress of the people; they make better homes and happier hearth sides; they are the avenues of trade, the highways of commerce, the mail routes of information, and the agencies of speedy communication; they mean the economical transportation of marketable products—the maximum burden at the minimum cost; they are the ligaments that bind the country together in thrift and industry and intelligence and patriotism; they promote social intercourse, prevent intellectual stagnation, and increase the happiness and the prosperity of our producing masses; they contribute to the glory of the country, give employment to our idle workmen, distribute the necessaries of life—the products of the fields and the forests and the factories—encourage energy and husbandry, inculcate love for our scenic wonders, and make mankind better and broader and greater and grander.

The plain people of the land are familiar with the truths of history. They know the past. They realize that often the difference between good roads and bad roads is the difference between profit and loss. Good roads have a money value far beyond our ordinary conception. Bad roads constitute our greatest drawback to internal development and material progress. Good roads mean prosperous farmers; bad roads mean abandoned farms, sparsely settled country districts, and congested populated cities, where the poor are destined to become poorer. Good roads mean more cultivated farms and cheaper food products for the toilers in the towns; bad roads mean poor transportation, lack of communication, high prices for the necessaries of life, the loss of untold millions of wealth, and idle workmen seeking employment. Good roads will help those who cultivate the soil and feed the multitude, and whatever aids the producers of our country will increase our wealth and our greatness and benefit all the people. We cannot destroy our farms without final decay. They are today the heart of our national life and the chief source of our material greatness. Tear down every edifice in our cities and labor will rebuild them, but abandon the farms and our cities will disappear forever.

Mr. Chairman, the report of the country life commission, appointed by President Roosevelt to consider the condition of the farmers and recommend remedies for existing deficiencies in country life, was submitted to congress on February 9, 1909, together with a message from the President. While the commission purposely avoided indorsing any particular bill now before congress for national aid for good-road building, it does make certain specific recommendations.

"The demand for good highways," it says, "is general among the farmers of the entire United States. Education and good roads are the two needs most frequently mentioned in the hearings. Highways that are usable at all times of the year are now imperative, not only for the marketing of produce, but for the elevation of the social and intellectual status of the open country and the improvement of health by insuring better medical and surgical attendance. The advantages are so well understood that arguments for better roads are not necessary here. With only unimportant exceptions, the farmers who have expressed themselves to us on this question consider the federal government is fairly under obligation to aid in the work. We hold that the development of a fully serviceable highway system is a matter of national concern, co-ordinate with the development of waterways and the conservation of our native resources. It is absolutely essential to our internal development. The first thing necessary is to provide expert supervision and direction and to develop a national plan. All the work should be co-operative between the federal government and the states. The question of federal appropriation for highway work in the states may well be held in abeyance until a national service is provided and tested. We suggest that the United States government establish a highway engineering service, or equivalent organization, to be at the call of the states in working out effective and economical highway systems."

Mr. Chairman, the report and recommendations of the commission are highly valuable, as its careful investigation, including personal visits to all sections of the country, and correspondence with 550,000 residents of the country districts as to the most pressing needs of the farmers for the improvement of their condition, shows that public sentiment is unanimous in favor of better roads as a practical means of supplying existing defiiciencies in country life.

In his message to congress accompanying the commission's report, President Roosevelt summarizes the conclusions arrived at by the commission, and states that as the result of its investigations the following three great general and immediate needs of the country life stand out:

"First. Effective co-operation among farmers, to put them on a level with the organized interests with which they do business.

"Second. A new kind of schools in the country, which shall teach the children as much outdoors as indoors, and perhaps more, so that they will prepare for country life, and not as at present, mainly for life in town.

"Third. Better means of communication, including good roads and a parcels post, which the country people are everywhere, and rightly, unanimous in demanding."

Mr. Chairman, the satisfaction of the first two of these needs will be greatly facilitated by the adoption of a system of improved roads extending through all the farming sections of the country. Bad roads are the chief obstacle to co-operation among the farmers, and improved roads will make co-operation possible.

The need for a new kind of country schools cannot be met so long as our dirt roads, which at certain seasons are almost impassable, prevent the attendance of the farmers' children at centralized schools where they could have all the advantages of a graded school in connection with a high school. Central schools of this kind are now being established in some sections of the country, where good roads permit the pupils of an entire township being transported to them daily from their homes, and with the extension of improved roads this school system would become general. It can thus be seen that of the three reforms which in the opinion of the president have been shown to be urgently desirable, road improvement is the most important, as it would aid in making the others practicable.

That highway improvement is the most important economic reform has long been urged by the farmers, who, through their principal organization, the National Grange, have been pesistently agitating for the adoption of a policy of federal aid for good road construction and maintenance. The declaration by the country life commission that the establishment of a fully serviceable highway system is a matter of national concern, absolutely essential to our internal development, should serve to hasten the enactment of legislation providing for the creation of a national highway commission, and making liberal appropriations for carrying on its work.

The direct connection between good roads and the value of farm lands is shown in a striking manner in Bulletin No. 38 of the United States Department of Agriculture. This bulletin gives the results of an investigation by the office of public roads of that department relating to public-road mileage, revenues, improved roads, and expenditures in the United States in the year 1904, and the information contained therein is of great importance in connection with the movement on behalf of the systematic improvement of the public highways.

The returns from various states show that in nearly every case the states having the highest percentage of improved roads have the largest population per mile of road, thus showing that better roads are a powerful factor in encouraging the settlement of unused lands, especially in sparsely populated sections of the country. Good roads are also an important influence in retaining in the farming districts the desirable elements who might otherwise drift into the towns and cities. As the price of farm lands depends on their productivity, accessibility to markets, and population engaged, or desiring to engage, in agricultural pursuits, it follows that road improvement, by attracting additional settlers, and giving them better facilities for reaching their markets, directly tends to increase the values of all farm lands within the radius of the roads improved.

A comparison of the percentage of the improved roads of the various states shows that the average percentage of the improved roads in all states where farm land is worth less than $20 per acre is only 1.8 per cent; whereas in the states where the acreage value is more than $20, improved roads constitute an average of 9 per cent of the total mileage.

While there may be minor causes of varieties in the value of farm lands, it is an undoubted fact that as a general rule the higher values of certain states are largely due to their superior roads. Records on file in the office of public roads show that farm lands have been known to advance in value from 50 to 500 per cent on account of the improvement of the roads connecting them with market towns.

When the facts secured by the Department of Agriculture become known to the farmers of the country, and they realize that the establishment of a complete system of properly constructed public roads will have the direct effect of greatly increasing the value of their farms, they will be the foremost advocates of a broad, comprehensive policy of public-road improvement by the nation, states, counties, and townships.

Mr. Chairman, the farsighted wisdom of Julius Cæsar built from the imperial exchequer the magnificent roads that led in all directions to eternal Rome. The great Napoleon—Cæsar like—built the roads of France that center in Paris from the general funds of the government; and these French roads have done more than any other single agency to encourage the thrift and increase the industry and insure the contentment of the people of France. Cæsar and Napoleon were the great road builders of ancient and modern times, and their foresight and their judgment and their work demonstrated the beneficent results that follow like the night the day the building of great governmental highways.

The Chairman. The time of the gentleman from New York has expired.

Mr. Sulzer: Mr. Chairman, I ask unanimous consent to print in the Record as a part of my remarks an address by the Hon. N. J. Bachelder, master of the National Grange.

The Chairman. Is there objection? [After a pause.] The Chair hears none, and the request is granted.

The address referred to follows:

THE DEMAND OF THE FARMERS FOR NATIONAL AID FOR HIGHWAY IMPROVEMENT.

Address by the Hon. N. J. Bachelder, Master of the National Grange—
National Carriage Builders' Association, Chicago, October 14, 1908.

"The deplorable condition of the public roads in nearly all sections of the United States has for many years been the subject of careful consideration by the farmers, and they fully realize the great economic and social importance of substituting a scientific system of road construction and maintenance for the crude and old-fashioned methods that prevail to so large an extent at the present time. It may seem to outsiders that it has taken the farmers a long time to appreciate the benefits of improved roads, but in reality they have not been so backward as some of their critics suppose. As the chief sufferers from the rough dirt roads which constitute by far the greater mileage of the country's highways, the farmers have been foremost in favoring the general policy of road improvement, and have been using their influence to bring about a change in methods of road construction.

"Up to a comparatively recent period the question of better roads was regarded as one that concerned only the districts in which the highways are located, and it was believed that the expense of road construction and improvement should be borne by such districts. As the result, very largely, of the persistent agitation by the farmers for better roads, the road problem has come to be considered from the wider point of view that bad roads affect not only the communities through which they run, but also the interests of the towns, cities, states, and nation. There is now a general agreement that since the manufacturers, merchants, and workers of the country at large are all concerned with the prosperity of the farmers, the question of good roads, as a means of improving the condition of the farmers, is of direct interest to all other classes of our people.

"I assert without fear of contradiction that the establishment of a complete system of improved public highways is the most important economic issue now confronting the American people. The conservation of our forests and other natural resources; the improvement of our rivers and harbors; railway and trust regulation; all these sink into insignificance in comparison with this question, in so far as it relates to the permanent welfare and prosperity of the nation. Careful estimates of the loss in time, labor, and actual expenditure for marketing the country's enormous volume of farm products show that bad roads impose an annual burden of at least $125,000,000, the difference between the cost of hauling these products over the dirt roads, which constitute 93 per cent of our total road mileage, and the cost of hauling the same quantity over improved roads. This loss falls heaviest on the farmers, whose productive capacity is decreased because of the greater portion of their time that is spent in conveying their crops to market, but it also imposes the burden of higher prices on the consuming public generally. Manufacturing and business interests are affected through the fact that under present conditions the farmers produce less, and therefore consume less manufactured goods, than they would under more favorable conditions.

"It is a truism that the prosperity of the whole country depends on the condition of our agricultural interests, yet this simple statement of fact is practically ignored in all discussions of how to restore and main tain prosperity. The dependence of our whole complicated system of manufacturing, transportation, and trade on the farmers of the country has been clearly illustrated during the past year, when Wall street, our great railway systems, and to a large extent our manufacturing and business interests generally, have been anxiously following the crop reports, in order to assure themselves of a more favorable outlook and the coming of another period of manufacturing, transportation, and business activity. But when it comes to appropriating money by Congress, how do we find the great basic agricultural industry treated? The statistics of the expenditures of the national government during a period of ten years ending with 1906 show that out of appropriations of $6,309,742,632, collected, it must be remembered, by taxes paid in large part by the farmers of the country, only $47,000,817 was devoted to furthering the interests of agriculture; that is, three-quarters of 1 per cent of the total appropriations for the department of our national government that is concerned with the advancement and welfare of the most important interest of the country.

"Much attention has recently been given to the appointment of a national commission to study the needs and condition of the farmers, with a view to aiding in making farm life more attractive and desirable. The commission will doubtless receive many suggestions, but I am confident that when the real sentiment of the farmers of every section of the country, as to the reform which would confer the greatest benefit upon them, is expressed, it will be, "Give us good roads."

"It is because of their earnest conviction that the improvement of our highways would be the most effective agency in promoting not only their own prosperity, but that of the entire country, that the farmers are now everywhere demanding larger appropriations by the states for road improvement, and for federal appropriations for the same purpose. They believe that a part of the money raised by the taxation of all the people of the United States should be devoted to assisting in the construction of better roads, and are taking action to secure the enactment of the necessary legislation by congress.

"The initiative in the movement for federal appropriations has been taken by the farmers through their principal organization—the National Grange—which has upward of 1,000,000 members, with local granges in all sections of the country.

"The National Grange is organized to further the interests of the farmers in legislative matters, and has for several years favored the policy of national aid to road improvement. During the past year it has perfected plans for carrying on a widespread, systematic movement throughout the whole country, for the purpose of creating a public sentiment favorable to legislation by congress creating a national highways commission and making liberal appropriations in aid of public road improvement. The grange believes that the proper method of securing legislative action on any subject is through first convincing the people that it is in their interest, and when this has been accomplished bringing the influence of the individual voters to bear on their senators and representatives; and it is with this view that they are conducting their educational campaign for good roads.

"A bill embodying the principle of federal assistance was prepared by the grange legislative committee, and introduced in congress at its recent session by the Hon. Frank D. Currier of New Hampshire. This bill was carefully drawn so as to meet all objections raised against bills previously introduced for the same purpose. By decisions of the Supreme Court of the United States it has been held that the National Government has power to construct, maintain, or improve roads in the various states used in interstate commerce, and all roads leading into or connecting therewith. Under the grange bill it will be possible for the proposed highways commission to aid in the improvement of any road in any section of the country, since all roads connect with or lead into some other road which is used in interstate commerce. It is believed, however, that the greater part of such appropriations as may be made by congress will be expended by the highway commissions or other road authorities of the various states.

"It may be objected that in undertaking to assist in the improvement of our highways the National Government would be encroaching on the sphere of the states, and that the matter is one with which congress has no concern. I would submit that the long neglect of the nation to contribute toward the expenditures for road improvement is no reason why this mistaken policy should be continued. The chief obstacle, in fact I might say the only difficulty, in the adoption of a general plan of highway improvement is the lack of the money necessary for the construction and maintenance of improved roads. The principle that the work of road improvement should be provided for more largely out of the public funds and less at the expense of the abutting owners is finding general acceptance as a matter of state policy, and in many states large amounts are being annually appropriated for the public roads. But there is a limit to the ability of the states to furnish the funds required, and it is for this reason that the farmers feel justified in urging that appropriations be made out of the revenues derived by taxing the people of the whole country for what is so clearly a matter of national importance.

"The farmers have for a long time believed that the highways of the country are of greater importance than its waterways, and that every argument in favor of appropriations by congress for the improvement of our rivers applies even more strongly to the improvement of the public roads. They also believe that they are not now receiving a fair share of the money taken from them as federal taxes, and that if congress wishes to dispose wisely of the present large surplus in the treasury it can not do better than to devote at least $50,000,000 to the work of road improvement.

"The benefits which would follow the enactment of the legislation advocated by the National Grange are by no means to be measured by the mileage of improved roads that could be constructed with the appropriations made by congress. The most effective argument for good roads is the object lesson of the improved road, as contrasted with the ordinary dirt road, and each new section of properly constructed road is an inducement for the municipal, county, and state road authorities to unite in placing the largest possible mileage of the highways within their jurisdiction in a similar condition.

"Another great advantage resulting from federal appropriations expended under the general supervision of the proposed national highways commission would be the substitution for our present haphazard methods of road construction of a scientific system of road making. It is estimated that out of our annual expenditure for road construction and maintenance of about $80,000,000 at least one-half is wasted through unwise methods or the use of wrong materials. This waste would be to a large extent, if not entirely, avoided through bringing to bear on the subject the knowledge and experience of trained engineers, whose advice and services would be at the disposal of the various local road authorities. I may mention in this connection the example of France, which is admitted to have the best road system of the world. It is the opinion of experts who have given the subject careful consideration that the superiority of the French roads is chiefly due to the fact that the National Government of France not only contributes very largely to the construction and repair of the highways, but also maintains a staff of highly trained road experts, whose co-operation with the local road authorities has given the whole country an effective body of competent highway administrators.

"The subject is of such magnitude and extends in so many directions that I have only been able to outline some of its phases. I am confident that when the attitude of the farmers is understood and the vital importance of the question realized that public sentiment will be practically unanimous in favor of this proposition, and that congress will at an early date enact this most desirable legislation.

FINANCIAL STATEMENT OF COUNTY FARMER'S INSTITUTES IN IOWA FOR FISCIAL YEAR, JUNE 30, 1907 TO JULY 1, 1908

Nuumber	Counties	Receipts			Disbursements									Number
		State aid	Membership fees and other sources	Total	Speakers	Judges	Premiums			Printing, advertising and postage	Hall rent	Other expenses not itemized	Total	
							Corn	Poultry	Miscellaneous					
1	Adair	$ 75.00	$ 77.00	$ 152.00	$ 50.00		$ 27.00	$ 45.00		$ 15.00	$ 15.00		$ 152.00	1
2	Appanoose	75.00	62.30	137.30	58.30					39.00	40.00		137.30	2
3	Benton	74.05		74.05	22.55	$ 10.00				16.50	25.00		74.05	3
4	Black Hawk	75.00		75.00	41.00					5.50		$ 28.50	75.00	4
5	Bremer	75.00	30.95	105.95	41.05					3.25	50.00	11.65	105.95	5
6	Buchanan	75.00		75.00	15.00		6.00			18.00	20.00	16.00	75.00	6
7	Buena Vista	75.00	170.00	245.00	75.00		70.00				75.00	25.00	245.00	7
8	Butler	75.00	1.56	76.56	40.59		6.00		$ 5.00	3.97	21.00		76.56	8
9	Calhoun	75.00	7.07	82.07	30.00					17.07	10.00	25.00	82.07	9
10	Carroll	75.00	188.31	263.31	35.31		78.00		100.00		50.00		263.31	10
11	Cedar	75.00		75.00	54.25					7.75		13.00	75.00	11
12	Cerro Gordo	75.00	.25	75.25	41.75		12.00				18.50	3.00	75.25	12
13	Cherokee	75.00	231.50	306.50	89.25		48.25		53.00	10.00	93.00	12.00	306.50	13
14	Chickasaw	75.00	2.20	77.20	42.80					3.50		30.90	77.20	14
15	Clay	75.00	156.10	231.10	78.75	11.00				41.35	100.00		231.10	15
16	Clayton	35.90		35.90	13.00					2.90	20.00		35.90	16
17	Clinton	75.00	3.26	78.26	38.76					5.00	12.00	22.50	78.26	17
18	Crawford	54.26		54.26	44.26						10.00		54.26	18
19	Dallas	75.00	39.47	114.47	25.57		75.00		8.00	5.90			114.47	19
20	Decatur	69.75	26.25	96.00	37.80		27.85			20.35	10.00		96.00	20
21	Delaware	68.67		68.67	33.00					5.84		29.83	68.67	21
22	Des Moines	72.00		72.00	36.43					25.57	10.00		72.00	22
23	Dickinson	75.00	57.50	132.50	44.70					13.00	60.00	14.80	132.50	23
24	Dubuque	75.00	51.00	126.00	45.00		11.65		30.65	4.70	20.00	14.00	126.00	24
25	Emmett	75.00	32.23	107.23	88.23						15.00	4.00	107.23	25
26	Fayette	75.00		75.00	27.00	12.00	9.00			17.00	10.00		75.00	26
27	Floyd	75.00	1.77	76.77	31.55		21.00			12.22	12.00		76.77	27
28	Franklin	75.00	120.09	195.09	71.57					24.00	75.00	24.52	195.09	28
29	Fremont	75.00	54.92	129.92	49.92		45.00				5.00	45.00	129.92	29
30	Greene	68.00		68.00	20.00					38.00	10.00		68.00	30

31	Grundy	62.92		62.92	47.92					7.50		7.50	62.92	31
32	Guthrie	75.00	23.65	98.65	22.70		28.25			35.70		12.00	98.65	32
33	Hamilton	75.00	12.65	87.65	48.15		15.00			9.50	10.00	5.00	87.65	33
34	Hancock	75.00		75.00	59.38		7.00		4.75	3.87			75.00	34
35	Hardin	75.00	17.50	92.50	35.25		20.00		7.75	1.50	28.00		92.50	35
36	Harrison	72.92		72.92	59.20					8.72	5.00		72.92	36
37	Henry	75.00	59.00	134.00	116.00						18.00		134.00	37
38	Howard	67.50		67.50	50.50				5.50	5.00		6.50	67.50	38
39	Humboldt	75.00	48.57	123.57	59.17					24.90	36.50	3.00	123.57	39
40	Ida	73.36		73.36	65.60					4.76		3.00	73.36	40
41	Iowa	69.73		69.73	23.62	6.12				11.74	23.50	4.75	69.73	41
42	Jackson	75.00		75.00	33.95					3.50		37.55	75.00	42
43	Jefferson	75.00	.13	75.13	33.13					32.00	10.00		75.13	43
44	Johnson	68.31		68.31	38.40		5.00			19.81	4.00	1.10	68.31	44
45	Keokuk	75.00	168.17	243.17	88.12					130.05	20.00	5.00	243.17	45
46	Kossuth	52.50		52.50	33.50					6.50		12.50	52.50	46
47	Lee	75.00	15.31	90.31	47.90					21.91	20.50		90.31	47
48	Linn	75.00	38.57	113.57	54.22					28.61	24.00	6.74	113.57	48
49	Louisa	75.00		75.00	49.20					8.30	17.50		75.00	49
50	Lucas	73.17		73.17	41.97				9.50	21.70			73.17	50
51	Lyon	75.00	237.71	312.71	71.46	11.50	10.00	10.00	4.00	142.50	35.00	28.25	312.71	51
52	Madison	62.55		62.55	55.30					4.25		3.00	62.55	52
53	Mahaska	75.00	879.42	954.42	30.00		185.60		381.30	271.87	42.25	43.40	954.42	53
54	Marion	75.00	22.05	97.05	24.00					63.05	10.00		97.05	54
55	Marshall	75.00	15.63	90.63	21.00					24.50	26.11	18.52	90.63	55
56	Mills	75.00	15.44	90.44	14.44					21.00	45.00	10.00	90.44	56
57	Mitchell	45.34		45.34	24.84					5.50	15.00		45.34	57
58	Monona	75.00	146.75	221.75	16.69	5.00	50.00		117.91	11.90		20.25	221.75	58
59	Monroe	75.00		75.00						50.00	25.00		75.00	59
60	O'Brien	75.00	38.25	113.25	44.60					10.15	40.00	18.50	113.25	60
61	Osceola	74.45		74.45	40.60					10.35		23.50	74.45	61
62	Page	75.00	.25	75.25	38.25					7.00	30.00		75.25	62
63	Palo Alto	75.00	71.73	146.73	80.83		21.00		23.50	6.50	12.00	2.90	146.73	63
64	Pocahontas	75.00	81.33	156.33	65.00		14.50			30.83	20.00	26.00	156.33	64
65	Polk	75.00		75.00	43.00						32.00		75.00	65
66	Poweshiek	75.00	148.69	223.69	30.04		50.00		74.75	18.90	50.00		223.69	66
67	Ringgold	75.00	150.00	225.00	42.25		37.00		71.50	29.25	30.00	15.00	225.00	67
68	Sac	75.00	36.27	111.27	77.77					3.50	30.00		111.27	68
69	Scott	69.30		69.30	32.05		29.00			2.25		6.00	69.30	69
70	Shelby	75.00	126.00	201.00	25.75	20.00	41.00		93.50	20.75			201.00	70
71	Sioux	75.00	15.99	90.99	63.99					3.00	24.00		90.99	71
72	Story	75.00	22.20	97.20	27.55		28.00		10.50	5.15	15.00	11.00	97.20	72
73	Tama	75.00	5.15	80.15	36.65					3.50	40.00		80.15	73
74	Union	75.00		75.00	43.35		1.50			10.85	16.00	3.30	75.00	74
75	Van Buren	72.68		72.68	35.59					22.09	15.00		72.68	75
76	Wapello	75.00		75.00	31.60					18.40	25.00		75.00	76
77	Warren	75.00	40.79	115.79	40.10		14.00		20.00	25.69	4.00		115.79	77
78	Washington	75.00	55.29	130.29	52.89					49.30	10.00	18.10	130.29	78

FINANCIAL STATEMENT OF COUNTY FARMER'S INSTITUTES IN IOWA—CONTINUED

Number	Counties	Receipts			Disbursements									Number
		State aid	Membership fees and other sources	Total	Speakers	Judges	Premiums			Printing, advertising and postage	Hall rent	Other expenses not itemized	Total	
							Corn	Poultry	Miscellaneous					
79	Wayne	75.00	----------	75.00	53.34	----------	----------	----------	----------	3.66	18.00	----------	75.00	79
80	Winnebago	75.00	11.00	86.00	57.00	----------	19.00	----------	----------	10.00	----------	----------	86.00	80
81	Woodbury	73.15	----------	73.15	12.60	----------	23.00	----------	22.00	9.55	5.00	1.00	73.15	81
82	Worth	75.00	----------	75.00	30.00	----------	17.91	----------	----------	13.09	14.00	----------	75.00	82
83	Wright	75.00	202.85	277.85	146.50	----------	7.00	----------	15.50	14.08	66.77	----------	277.85	83
	Total 1907-08	$6,030.51	$4,020.07	$10,050.58	$3,739.56	$ 75.62	$1,060.51	$ 55.00	$ 1,058.61	$ 1,689.59	$ 1,698.63	$ 673.06	$10,050.58	
	Total 1906-07	$5,350.75	$2,604.23	$ 7,954.98	$3,230.83	$ 247.97	$ 288.88	$ 34.35	$ 799.50	$ 1,330.10	$ 1,178.13	$ 866.22	$ 7,954.98	

PART XIII

FINANCIAL STATEMENT

AND

Report of Agricultural Conditions

BY

County and District Agricultural Societies In Iowa, 1908

ADAIR.

W. W. WEST, GREENFIELD, OCTOBER 9, 1908.

General Condition of Crops and Season—Very favorable.

Corn—Corn well matured and will make a good average yield of good quality. New corn is being contracted at 50 cents per bushel.

Oats—Very good quality and a light yield per acre. Worth 42 cents on the market.

Wheat—Small acreage.

Rye—Small acreage, but a good crop.

Barley—Small acreage, good yield and good quality.

Flax—None raised.

Buckwheat—None raised.

Millet—Small acreage, but a good crop.

Sorghum—Small acreage, and a fair crop.

Timothy—Very fair crop, and a good yield. Considerable cut for seed.

Clover—The heaviest crop that has been raised for years, and many hundred acres cut for seed.

Prairie Hay—None.

Other Grains and Grasses—A heavy fall pasturage.

Potatoes—Good crop and good quality. More than enough to supply the home demand.

Vegetables—Very good.

Apples—About half a crop.

Other Fruits—Very light crop.

Cattle—A good supply, in splendid condition, splendid quality, and good price.

Horses—Especially good quality of young colts; good horses are in good demand and selling at good prices.

Swine—In a good healthy condition and are selling at good prices.

Sheep—An average number.

Poultry—Average number birds raised and are selling at good prices.

Bees—On account of heavy crop of clover, bees have been doing very nicely and have put up a splendid supply of honey.

Drainage—An unusual amount of tiling has been done this season, redeeming many hundreds of acres of land. Our tile factory here can't supply the demand.

Other Industries—We would not neglect to mention the cows of this county, which pays the grocery bills of more than 90 per cent of the farmers of this county. The creameries of this county ship hundreds of tons of butter annually.

Lands—Lands are fast becoming very valuable and selling from $65.00 to $125.00 per acre.

Report of Fair—September 8 to 11, 1908, were the dates of our fair. We had a splendid fair, with the best showing of stock and all other products that have been here for many years, and was a financial success.

ADAIR.

A. C. Savage, Adair, October 21, 1908.

General Condition of Crops and Season—Good. Spring backward, wet and cold; summer fine. Frost injured small portion of the corn crop.

Corn—One of the best crops in this vicinity in fifteen years. Of fine quality. A small portion of the late corn injured by frost; price 50 cents.

Oats—Light and of poor quality. Yield about 20 bushels per acre. Price 40 cents.

Wheat—Fair quality.

Rye—Very little raised and only for feed.

Barley—Very little grown for feed.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—A little for feed. Yielded well.

Timothy—Good. Not as much cut for seed as usual.

Clover—Fine crop and good yield. Considerable cut for seed.

Prairie Hay—None.

Potatoes—Fair; somewhat small; fair yield.

Vegetables—Good.

Apples—Better crop than expected. Nearly all varieties yielded well.

Other Fruits—Strawberries and small fruit light; peaches fair.

Cattle—Have not done as well as usual; too wet. Good prices prevailed during most of the year. Feeding will be light on account of the high price of corn.

Horses—Stock improving and believe there are more horses than a year ago. Market has been slow but prices good.

Swine—Good prices; number short, probably due to wet weather. Some disease south and southwest during spring and summer. Not as many being fed as usual on account of high price of corn.

Sheep—Few handled but seem to be profitable.

Poultry—Conditions improving and more being raised.

Bees—Returns have been good and good quality.

Drainage—More tile put in than heretofore and more slough land brought under cultivation.

Other Industries—Creameries have done larger business than any year before; good prices have been secured for cream. More cows are milked each year with profit.

Lands—Value increased and a number of farms have changed hands. Highest price, 67 acres adjoining town, $150.00 per acre; 80 acres, mile from town, $140.00 per acre; 390 acres, joining town, $100.00 per acre; 240 acres, eight miles from town, $92.50 per acre.

Report of Fair—Held at Adair September 23, 24 and 25. Best fair ever held; larger number of exhibits and exhibitors. Sentiment seems to be in favor of securing permanent grounds and incorporating the association. Exhibits showed marked improvement in quality. In way of amusements we furnished free ball games each day and some vaudeville and put on an evening show. No racing.

ADAMS.

George E. Bliss, Corning, September 20, 1908.

Corn—Seventy-five per cent of an average crop. Too wet in many places in June for a large yield.

Oats—Fifty-nine per cent of an average crop. Yielded from eight to forty bushels per acre; good quality.

Wheat—Ninety per cent of an average crop. Excellent quality; spring wheat made light yield but winter wheat was fine.

Barley—Ninety-nine per cent of an average crop. Good yield and fine quality.

Flax—None raised.

Millet—One hundred per cent of an average crop. A great deal sown and promises a lot of hay.

Sorghum—One hundred per cent. A great deal sown and promises well.

Timothy—One hundred per cent of an average crop. A large crop.

Clover—Eighty-nine per cent of an average crop; fine and of excellent quality.

Prairie Hay—One hundred per cent of an average crop. Very little wild grass in county.

Potatoes—Ninety-two per cent of an average crop; excellent quality and fair yield.

Vegetables—One hundred per cent of an average crop; all doing splendid.

Apples—Forty per cent of an average crop; frost killed more than one-half of apple blossoms but quality is good.

Cattle—One hundred per cent of the average number raised; cattle have done well owing to excellent pasture.

Horses—Ninety-five per cent of the average number raised; a good many colts raised and of good quality.

Swine—Eighty-three per cent of the average number raised; swine plague reduced many herds in the county.

Sheep—Ninety-five per cent of the average number raised; doing well but are being sold freely.

Poultry—Eighty-nine per cent of the average number birds raised; number will be reduced on account of wet spring.

Bees—One hundred per cent of the average number; increased rapidly and made a great quantity of honey.

Drainage—More tile put in this year than ever before.

Lands—Are at a standstill; very few real estate transfers.

Report of Fair—Very successful fair; receipts were $3,423, with all obligations met and nice balance in treasury.

ALLAMAKEE.

A. L. Larson, Waukon, October, 14, 1908.

General Condition of Crops and Season—Fairly good. A portion of the county was damaged by hail on June 20th but corn and hay crop revived and made a fairly good crop.

Corn—Fairly good; fully as good as last year.

Oats—Poor.

Wheat—Good.

Rye—Good.

Barley—Good.

Buckwheat—Good.

Millet—Good.

Sorghum—Good.

Timothy—Half crop.

Clover—Good.

Prairie Hay—None.

Other Grains and Grasses—Good.

Potatoes—Just fair.

Vegetables—Good.

Apples—Poor.

Other Fruits—Blackberries good.

Cattle—Good.

Horses—Good.

Swine—Good, but on account of scarcity of feed, had to be marketed light in weight.

Sheep—Good.

Pultry—Good.

Bees—Good.

Drainage—Always good in this county.

Lands—Are advancing slowly but surely.

Report of Fair—Held September 15th to 18, 1908; fairly good.

AUDUBON.

S. C. Curtis, Audubon, October 17, 1908.

General Condition of Crops and Season—The farming season of 1908 in Audubon county opened with dry, favorable weather for putting in crops and continued so until about the 20th of May. Some fear was felt regarding pastures and hay crop but at that time some very heavy rains fell insuring pasturage and a hay crop. At the same time the rains caused damage to bridges and corn and considerable loss resulted from the washing of hillsides and the flooding of bottom lands. The continuance of wet weather necessitated late planting of a small part of the corn. From the latter part of June the weather was seasonable and the yield of all crops fair except late potatoes.

Corn—Corn has done well since about July 1st, and appears to be a fair crop and most of it of good quality. Some late fields will yield small ears but sound and some fields will be soft and chaffy. Will probably have eight-five per cent of an average crop and of much better quality than in 1907.

Oats—Very uneven, varying from twenty to over forty bushels per acre and in weight from twenty to thirty-five pounds per bushel. Acreage yield about thirty bushels standard weight.

Wheat—Spring wheat yielding about twenty bushels per acre of good quality.

Barley—Near thirty bushels yield per acre of fair quality.

Timothy—Pastures held out well and the crop of hay is good both in quantity and quality, namely, timothy and clover. Very little wild hay owned in this county.

Prairie Hay—Very little wild hay.

Potatoes—Fair crop.

Vegetables—Very few vegetables raised.

Other Fruits—Fruits of all kinds were very scarce; killed by late spring frosts.

Poultry—This is quite an industry with the farmers in this county.

Other Industries—The only industry we have here is a cannery which ran about four weeks this fall, consuming quite a large amount of sweet corn of good quality.

Report of Fair—Held September 22, 23, 24 and 25, 1908. The fair was one of the most successful fairs ever held in the county, both in attendance and financially. Weather was very good except the last day which was very disagreeable on account of high winds, dryness, and dustiness.

BENTON.

Arad Thompson, Vinton, October 26, 1908.

General Condition of Crops and Season—Good. There have been no better crops in the ten years past.

Corn—Ninety per cent of an average crop; well matured and good yield. Acreage not up to average.

Oats—Average crop.

Wheat—Not wheat enough to report.

Rye—Small acreage but good yield and good quality.

Flax—None.

Buckwheat—Very small amount raised.

Timothy—Large yield and good quality.

Clover—Large crop, good quality.

Prairie Hay—Not much prairie left upon which to raise prairie hay.

Potatoes—Fine quality and good yield, probably ninety per cent of an average crop.

Vegetables—Fine.

Apples—The banner year.

Other Fruits—Quite a quantity of peaches raised for the first year of peaches.

Cattle—Many stockers, cows and young stock. Not as many fat steers s in some previous years, owing to the high price of corn and feed.

Horses—More good horses and colts than any previous year.

Swine—Not up to the average; as in cattle the high price of feed has affected the quantity and quality of hogs.

Sheep—This industry is increasing in this county.

Poultry—Continually on the increase. It has become one of the attractions at our county fair.

Bees—Not many.

Drainage—Farmers are continually draining their lands. The lands that once were considered almost worthless have become by drainage, the most productive and best.

Lands—The price has continually advanced and is now advancing. Farms sell from $100 to $150 per acre.

Report of Fair—Held September 23, 24 and 25, 1908. Weather was perfect and attendance large. In most departments the exhibits were full up to the average and in some departments were a marked improvemnt. Our premiums were larger than in former years and the best of feeling prevailed. The prospects are bright for a larger and better fair the coming year.

BLACK HAWK.

F. E. HOYT, LA PORTE CITY, OCTOBER 28, 1908.

General Condition of Crops and Season—Cold, wet spring; summer and fall warm and dry.

Corn—Forty bushels per acre, good quality. Sweet corn raised for canning factory not up to average. Price, $3.00 per ton at factory.

Oats—Thirty-five bushels per acre; good quality.

Wheat—None.

Rye—Twenty bushels per acre; good quality.

Barley—Thirty bushels per acre; good quality.

Flax—None.

Buckwheat—None.

Millet—Good; not much raised.

Sorghum—None.

Timothy—Two and one-half tons per acre; good quality.

Clover—Same as timothy.

Prairie Hay—None.

Other Grains and Grasses—None.

Potatoes—Below average but good quality.

Vegetables—Good average crop.

Apples—Large crop, good quality.

Other Fruits—All good; large crops.

Cattle—Many cattle; good condition.

Horses—Good increases; high prices.

Swine—Large number of pigs; no disease.

Sheep—Very few.

Poultry—Average number of birds raised; prices high.

Bees—Large crop of honey; twelve to ten cents per pound.

Drainage—Great deal of tiling done.

Other Industries—Some sugar beets raised but results not very satisfactory.

Lands—Advancing in price.

Report of Fair—Held September 15, 16 and 17, 1908. Weather good; average attendance.

BOONE.

W. C. TRELOAR, OGDEN, OCTOBER 16, 1908.

General Condition of Crops and Season—The general condition of the crops are good; the season was very wet in the spring.

Corn—Pretty good. The early corn is good while the late is a little soft.

Oats—Most of the oats are light.

Wheat—Small acreage but very fair quality; average yield about twenty-two bushels per acre.

Barley—Very little sown.

Timothy—Timothy was very good; mostly made for hay, very little threshed.

Clover—Good quality of seed but not very heavy yield.

Prairie Hay—Scarcely any.

Potatoes—Below an average on account of wet season.

Vegetables—Very fair.

Apples—Good yield of early apples but no winter varieties.

Cattle—The country is stocked with good grade cattle and a few bunches of pure breds are to be found.

Horses—Our horses are first-class as was evidenced by our large exhibit at the fair this year. This department attracted the most attention.

Swine—Good average number raised; well bred; some disease.

Sheep—A few sheep are fed. Not much interest taken in raising sheep; those fed are from the west and southwest.

Drainage—Probably more county drains in Boone county than any county in the state.

Lands—Worth from $80 to $125 per acre.

Report of Fair—Held at Ogden, September 14, 15 and 16, 1908. Delightful weather and good attendance. The management were out on the grounds early and late trying to make all arrangements agreeable to exhibitors and patrons, realizing that it takes hard and diligent work to make an institution of this character a success. The entries in all departments fell below last year, but this did not lesson the attendance. We account for this falling off in entries to the early dates, which were about two weeks earlier than ever before. The society owns its own grounds and while they did not make any payment as yet on their indebtedness they put about $200 in improvements this year and will probably have a little surplus from the fair of 1908. They own forty acres of choice land located inside the corporation of Ogden and although the fairs held the past several years have not been a paying proposition yet the increased value of lands have kept the credit of the society good.

BOONE.

A. M. BURNSIDE, BOONE, OCTOBER, 1908.

General condition of Crops and Season—Considering the excessive rainfall during sowing and planting time the crops were good.

Corn—The usual acreage planted and good yield and quality.

Oats—In some localities a good yield reported and in others very light but good quality.

Wheat—Very little raised but good yield. Some winter wheat also raised.

Rye—None sown.

Barley—Good.

Flax—None raised.

Buckwheat—Very little raised; good quality.

Millet—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—Acreage small and light crop.

Other Grains and Grasses—Good.

Potatoes—Not any raised for shipment; all used for home consumption; were of good yield and quality.

Vegetables—Good.

Apples—Good crop of early varieties.

Other Fruits—Early fruits damaged by frost; small yield.

Cattle—The usual number being raised. Not many being fed on account of the high price of grain.

Horses—More being raised and a good demand for drafters.

Swine—Average number raised; very few old ones on hand. Cholera reported in different localities.

Sheep—More attention being given to the raising of sheep and good breeds being introduced.

Poultry—Large numbers being raised although the numbers were considerable reduced in the spring months on account of the wet, cold weather.

Bees—Very few kept but a good crop of honey.

Drainage—More county drains being established, there being now about sixty in the county besides a vast amount of private drains.

Other Industries—Coal mines, brick and tile plants, all running to their full capacity.

Lands—Not much changing hands but when a sale is made it is for a good price.

Report of Fair—Held at Boone September 22-25th. Good weather during the fair. Exhibits and attendance were doubled over last year. Good races and free attractions. The management was well pleased with the showing made at the second annual fair.

BUCHANAN.

CHARLES L. KING, INDEPENDENCE, SEPTEMBER 19, 1908.

General Condition of Crops and Season—Good.

Corn—Fine.

Oats—Fair.

Wheat—None.

Rye—Good.

Barley—Good.

Flax—None.

Buckwheat—Good.

Millet—Fine.

Sorghum—Good.

Timothy—Extra Good.

Clover—Good.

Prairie Hay—Extra Good.

Other Grains and Grasses—All good but oats.

Potatoes—Good but crop will be light.

Vegetables—Good and great yield.

Apples—Fine.

Other Fruits—Fine.

Cattle—Good; plenty of pasture.

Horses—Good.

Swine—Fair.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—More being done than ever before.

Lands—About holding their previous prices, ranging from $65 to $125 per acre.

Report of Fair—Held September 1, 2, 3 and 4. Attendance and interest about as usual. Larger and better display of cattle than ever. Gate receipts were very small for the reason that we gave an entertainment on July 4, 1908, and unintentionally disappointed the spectators, so, in order to right matters, we gave free admission to fair to all those who were here July 4th. This made a big crowd but small box receipts.

BUENA VISTA.

WM. ZEILMAN, ALTA, OCTOBER 31, 1908.

General Condition of Crops and Season—Crops good except oats which were poor. Temperature about normal. Excessive rainfall during June, July and August, but dry since then.

Corn—Average acreage; yield one hundred ten per cent of an average crop and quality good.

Oats—Acreage up to the average but yield poor; about seventy per cent of an average crop and very poor quality.

Wheat—Little raised but a good yield and good quality.

Rye—None sown.

Barley—One hundred per cent of an average crop and a good berry.

Flax—Not much sown; a poor quality and yield.

Buckwheat—None.

Millet—Very little sown; good yield and good quality.

Sorghum—Very little raised but it was good.

Timothy—Good quality and an average yield; the seed crop only fair.

Clover—Heavy hay crop but no seed. Not much seeded last spring on account of price of seed.

Prairie Hay—Not much in county; yield good.

Other Grains and Grasses—Experimenting a little with alfalfa, also with speltz.

Potatoes—Good; yield above the average and of good quality.

Vegetables—Average crop with the exception of tomatoes and cabbage which were poor.

Apples—Very light yield and not very good quality.

Other Fruits—Cherries good; plums scarce and all small fruit almost a failure.

Cattle—Average number and in good flesh; prices low.

Horses—Increasing in number and decreasing in price; in fair flesh.

Swine—Below the average in number and not in as good shape as usual. A little cholera in center of county.

Sheep—Good and increasing in numbers.

Poultry—A little below the average on account of wet weather.

Bees—Number of colonies up to the average but yield of honey only fair.

Drainage—A great deal of underground drainage being done and several drainage ditches completed and working on others.

Lands—Increasing in price; in southern part of county it is changing hands at $100 to $140 per acre; in the northern and eastern parts it is not worth quite as much.

Report of Fair—Held at Alta, August 11-14, inclusive. Weather against it; rained two days and those days the attendance was light; other days a good attendance. Exhibits in all departments good except horses.

BUTLER.

N. W. Scovel, Butler, September 18, 1908.

General Condition of Crops and Season—Very good.

Corn—Good, but a little backward owing to the late spring.

Oats—Good.

Wheat—Fair.

Rye—Good.

Barley—Good.

Flax—I know of none in the county.

Buckwheat—Average what there is of it, which is very little.

Millet—Good.

Sorghum—Average, but very little in county.

Timothy—Good.

Clover—Good, but very little sown.

Prairie Hay—Good, but very late, owing to the late spring.

Other Grains and Grasses—On the average they all are the best in five years.

Potatoes—A very good crop.

Vegetables—All are good.

Apples—About an average crop.

Other Fruits—Mostly good, except blackberries, which were hurt by a dry spell at the time they were ripening.

Cattle—Not in very good condition owing, it is thought, to the hot weather and scarcity of shade.

Horses—Average, except that a great many young colts died at foaling.

Swine—Good; number below average owing to the scarcity of breeding stock, caused by their being sold on account of very poor corn crop last year.

Sheep—Average.

Poultry—A little light.

Bees—Very good.

Drainage—Considerable tile has been laid this year.

Other Industries—About an average with years past.

Lands—Soil was in good condition for working during the whole summer, and the price has steadily advanced. However, there were but few sales.

Report of Fair—Held September 1, 2 and 3, 1908. Report was a little better than in former years and is gradually getting better.

CALHOUN.

H. A. Arnold, Manson, October 19, 1908.

General Condition of Crops and Season—Fairly good; too much rain in early part of season but the balance very favorable.

Corn—Nearly all matured; will grade good.

Oats—Fair; too much moisture in the early part of the season for good results.

Wheat—None raised to speak of.

Rye—Good.

Barley—Fairly good.

Flax—Not much raised.

Buckwheat—Failure.

Millet—Excellent.

Sorghum—But little raised; good.

Timothy—Extra heavy.

Clover—Same as timothy.

Prairie Hay—Good.

Potatoes—Medium.

Vegetables—Good.

Apples—Generally light yield; rained in different localities.

Other Fruits—Fairly good.

Cattle—Conditions good.

Horses—Conditions good.

Swine—No disease as far as I know.

Drainage—Much is being done in the county; several large dredges are at work night and day. A vast amount of large tile are being used also.

Lands—Prices range from $65 to $150 per acre.

Report of Fair—Held September 1, 2, 3 and 4, 1908. Weather all that could be wished for; attendance a little less than a year ago. Nearly all breeds were represented in the horse department; also the cattle. Farm department never any better; art department well filled and ladies' departments were all excellent.

CALHOUN.

Corn—Average crop and of good quality; some loss of acreage in low lands but the well drained land yielded good, making average crop.

Oats—Average crop; early oats yielded good but late oats were a little lower than average.

Wheat—None grown.

Barley—Very little grown.

Flax—Fifty per cent of crop.

Buckwheat—None grown.

Millet—Very little grown; average crop.

Sorghum—None raised.

Timothy—Good; average crop.

Clover—Good; average crop.

Prairie Hay—Good; average crop.

Potatoes—Fifty per cent of crop.

Vegetables—Good.

Apples—Twenty-five per cent of crop.

Other Fruits—Average crop.

Cattle—Fair.

Horses—Average.

Swine—Not so many raised; prices good.

Sheep—Increased.

Poultry—Average.

Bees—Average amount of honey.

Drainage—Fifty per cent drained.

Other Industries—None.

Lands—Prices range from $75 to $150 per acre. Not much on the market.

Report of Fair—Held at Rockwell City July 30, 31 and August 1, 1908. Fair was scheduled for July 29, 30 and 31st but a rain of six inches preceded our opening day, hence the extension to August 1st. Weather favorable during the last three days of fair. Attendance and exhibits in all departments were curtailed on account of rains delaying harvesting and throwing it into fair time. Premiums were all paid in full and the receipts more than paid the expenditures.

CASS.

E. E. Marquis, Atlantic, October 31, 1908.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Fair.

Wheat—Fair.

Rye—Fair.

Barley—Fair.

Flax—Fair.

Buckwheat—Fair.

Millet—Good.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Fair.

Vegetables—Good.

Apples—Fair.

Other Fruits—Fair.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—Good.

Lands—Good.

Report of Fair—Held September 14-17, 1908. Best fair ever held in Cass county.

CASS.

J. J. Hogan, Massena, September 28, 1908.

General Condition of Crops and Season—Below average.

Corn—One-half crop.

Oats—One-third crop; quality fair; average, 20 bushels per acre.

Wheat—Fair to good; quality good; average 12½ bushels per acre.

Rye—Not enough to make an estimate.

Barley—Fair; not much planted.

Flax—None.

Buckwheat—None raised.

Millet—Some millet; fair crop. Yield below average on account of low ground being too wet.

Sorghum—Very little raised.

Timothy—Good; more than an average crop; put up in good shape. Yield one and one-half tons per acre.

Clover—Good; put up in good weather. Prospects for a good seed crop.

Prairie Hay—None.

Potatoes—Fair; below average.

Vegetables—Fair to good.

Apples—Short crop; very few to market.

Other Fruit—Some peaches; light crop; few plums.

Cattle—Big supply; not many being fed on account of scarcity of corn.

Horses—More than an average number.

Swine—Short crop of pigs.

Sheep—More than an average; some demand for more.

Poultry—Light supply of young poultry on account of wet spring.

Bees—Fair to good season; not many raised.

Drainage—Above the average amount of tile put in.

Lands—Raising in value; up ten to twenty per cent.

Report of Fair—Held August 31, September 1, 2 and 3, 1908. Attendance about as usual; expenses less than ordinary; all premiums paid and money to the good. People were pleased. Not so much stock exhibited on account of scarcity of feed.

CEDAR

F. H. CONNOR, TIPTON, OCTOBER 27, 1908.

General Condition of Crops and Season—Good.

Corn—Little above average.

Oats—Light yield but early oats good quality.

Wheat—Not much raised, but what there was was of good quality and large yield.

Rye—Good crop but not much planted.

Barley—Average and good quality.

Flax—None.

Buckwheat—Good quality and fair yield.

Millet—None.

Sorghum—Very little planted.

Timothy—Very good quality and big stand.

Clover—Very good quality and big stand.

Prairie Hay—Very good quality and big stand.

Other Grains and Grasses—Same as above.

Potatoes—Good crop.

Vegetables—Very good crop.

Apples—Crop not very good.

Other Fruits—Poor.

Cattle—Fair to good.

Horses—Good.

Swine—Good.

Sheep—Fair.

Poultry—Poor.

Bees—Very good.

Drainage—More tile laid this year than for many years back.

Other Industries—Corn and tomato canning factory; put up two-thirds canning.

Lands—Increase of $10 per acre over last year.

Report of Fair—Was not a financial success but had the best stock and horse show ever held on grounds.

CERRO GORDO.

GEO. H. PURDY, MASON CITY, OCTOBER 28, 1908.

General Condition of Crops and Season—The season has been very favorable on land that was well drained; excessive rain fell the first half of the season. Fine weather for haying and harvest; no rain during September until the last of month.

Corn—Corn good except on low land; reported from forty to sixty-five bushels per acre.

Oats—Average rather light; very uneven yield; fifteen to forty-five bushels per acre; average about twenty-four bushels per acre.

Wheat—Very little raised.

Rye—Very little raised.

Barley—Very little raised.

Flax—Very little raised.

Timothy—Good; probably would average two tons of hay per acre.

Clover—Came through the winter in good shape; average about two and one-half tons per acre.

Potatoes—Yield very uneven; from fifty to two hundred bushels per acre; average about ninety bushels.

Vegetables—Good with the exception of late cabbage; too dry during September and worms plenty.

Apples—Crop light. This was the off year here; some trees that bore light or no crop last year were loaded this year.

Other Fruits—Light crop.

Cattle—Looking good this fall, although the pastures were getting short before the late rains.

Horses—Work horses rather thin; those on pastures have done well.

Swine—Rather under sized and thin until they started feeding new corn.

Sheep—Have done well and are in good condition.

Bees—This has proven an exceptionally good season for bees. Swarmed freely and lots of honey.

Drainage—Several drainage districts established and considerable tiling done.

Other Industries—Have been generally prosperous and considerable building going on.

Lands—Very little changing hands but bringing good prices.

Report of Fair—Held September 8, 9, 10 and 11. Weather fine; attendance good; exhibits with the exception of swine very satisfactory. Cleared about fifteen hundred dollars over and above current expenses.

CHICKASAW.

C. L. PUTNEY, NASHUA, SEPTEMBER 23, 1908.

General Condition of Crops and Season—Spring late and wet but later conditions favorable; hay good; small grain fair and corn good and out of the way of frost.

Corn—Good; better than average crop.

Oats—Fair; hardly an average crop.

Wheat—None.

Rye—None.

Barley—None to amount to anything; good quality what there is of it.

Flax—None.

Buckwheat—Very little.

Millet—None to speak of.

Sorghum—Very little.

Timothy—Good crop; some to be shipped out.

Clover—Enough for home consumption; good quality.

Prairie Hay—Enough for home consumption; good.

Other Grains and Grasses—None.

Potatoes—Enough for home consumption; quality fair.

Vegetables—Enough for home consumption; very good.

Apples—No orchards to speak of; what we have is of good quality.

Other Fruits—A few plums and grapes.

Cattle—Are being graded up better every year; show at fair good in nearly all classes.

Horses—Raising more horses than formerly and better bred.

Swine—Average number raised and better bred.

Sheep—Numbers gradually increasing each year; good stock.

Poultry—Big item of revenue to farmers; more of them each year and better stock.

Bees—Very few in county.

Drainage—Good naturally and some little tiling being done where poor.

Lands—Values steady; average prices $70 to $75 per acre.

Report of Fair—Held September 1, 2, 3 and 4. Largest attendance since organized; all lines of exhibits well filled and displays good; weather fine and patrons well pleased with improvements made over last year.

CLAYTON.

HENRY LEUHSEN, GARNAVILLO. OCTOBER 14, 1908.

General Condition of Crops and Season—In spite of the backward season and an abundance of rain the crops in general are all that can be expected, with the exception of the northwest part of the county, where a heavy hail storm did considerable damage to all crops and fruits.

Corn—Good; about eighty to ninety per cent.

Oats—Much better both in quality and yield than last year.

Wheat—Very little raised.

Rye—Not much raised.

Barley—Good yield.

Flax—None raised.

Buckwheat—None raised to speak of.

Millet—Up to the average.

Sorghum—Good crop; fair quality.

Timothy—Good quality and yield.

Clover—Good crop and excellent quality.

Prairie Hay—Large crop and good quality.

Other Grains and Grasses—Good.

Potatoes—Good crop and quality in some parts; others not so good; bugs did the damage.

Vegetables—Up to the average.

Apples—Small crop.

Other Fruits—Up to the average.

Cattle—More attention given than heretofore; farmers take great pride in their herds of pure breds.

Horses—Scarce for market but seem to be raised extensively.

Swine—Another great industry in this section; farmers raise lots of them and good quality.

Sheep—More raised yearly; as high as five hundred to one herd.

Poultry—A very profitable industry.

Bees—An average yield; poor quality.

Drainage—Natural.

Other industries—Creamery very profitable.

Lands—Very good; prices way up; held from $75 to $115 per acre.

Report of Fair—Held at National, September 8, 9, 10 and 11, 1908. Weather was fine and attendance great; all seemed satisfied with the attractions, etc. Exhibits were good in all departments, especially in cattle show. Fair was a financial success.

CLAYTON.

I. P. Howard, Strawberry Point, October 8, 1908.

General Conditions of Crops and Season—Average crops, late, wet spring, offset by dry September.

Corn—Average acreage; good quality; fair yield.

Oats—Yield to acre light but of good quality.

Wheat—Good, but little raised.

Rye—Good.

Barley—Good.

Flax—None raised.

Buckwheat—Good.

Millet—Little raised.

Sorghum—Average acreage and good quality.

Timothy—Large amount and good quality.

Clover—Heavy yield.

Prairie Hay—But little grown.

Other Grains and Grasses—All good but dry weather in September injured pastures.

Potatoes—Yield light but of best quality.

Vegetables—All good.

Apples—Average yield and fair quality.

Other Fruits—All good.

Cattle—Dairy county, special attention given to milch cows but little feeding done.

Horses—Not many marketable horses but a large number of draft colts in the community.

Swine—A leading industry; several pure bred herds of different breeds, which sell at best prices.

Sheep—But few raised.

Poultry—Large amount raised with good profits.

Bees—Not many bees but output of honey good.

Drainage—Good drainage naturally.

Other Industries—All in favorable condition.

Lands—A steady advance in price.

Report of Fair—Held at Strawberry Point September 8, 9, 10 and 11, 1908. Premiums paid in full; slight increase in attendance, although weather very warm and dusty.

CLAYTON.

W. W. Davidson, Elkader, October 24, 1908.

General Condition of Crops and Season—Good.

Corn—Large yield and fine quality.

Oats—Mostly good.

Wheat—Good, but little is raised.

Rye—Good quality.

Barley—Good yield.

Flax—None.

Buckwheat—Very good.

Millet—None.

Sorghum—Reports show good crops but little is raised.

Timothy—Fine.

Clover—Good yield of hay; second crop well filled with seed.

Prairie Hay—None.

Other Grains and Grasses—Everything of good quality and large yield.

Potatoes—Poor crop in some localities and in others good.

Vegetables—Abundant.

Apples—Scarce.

Other Fruits—Plentiful.

Cattle—Fat and sleek.

Horses—Good quality and in fine condition.

Swine—Large number in county.

Sheep—Good crop wool.

Poultry—Large flocks.

Bees—Very few kept.

Drainage—Good.

Lands—Advancing rapidly.

Report of Fair—Held September 15, 16, 17 and 18, 1908. Largest crowd ever had on Thursday; good weather all week, very dry and dusty.

CLINTON.

E. J. Quigley, DeWitt, October 1, 1908.

Corn—Good crop.

Oats—Average crop.

Wheat—None raised.

Rye—Small acreage; crop good.

Barley—Very little raised here.

Flax—None.

Buckwheat—None.

Millet—None.

Sorghum—None.

Timothy—Excellent crop.

Clover—Good crop.

Prairie Hay—Good crop.

Other Grains and Grasses—All good crop.

Potatoes—Good crop; good quality.

Vegetables—Most varieties good.

Apples—Average crop.

Other Fruits—Good.

Cattle—Many raised; prices good.

Horses—Many good horses marketed at good prices.

Swine—Many pure bred swine raised here; many shipped to breeders in other localities.

Sheep—Few raised.

Poultry—Raised here in large numbers; sold at good prices.

Bees—None.

Drainage—Considerable being done here.

Other Industries—None.

Lands—Good and increasing in price.

Report of Fair—Grand success; entries in all departments good; attendance large.

CLINTON.

J. B. Ahrens, Lyons, September, 1908.

General Condition of Crops and Season—An average season.

Corn—Fair yield; about eight per cent, on lowlands a failure.

Oats—Poor; average about thirty bushels to the acre; quality good.

Wheat—Fall wheat good; spring wheat poor.

Rye—Very little raised and what there was raised yielded only about a half a crop.

Barley—Medium quality; yielded about twenty-five to thirty bushels per acre.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—None raised this year.

Timothy—Good quality and a full crop.

Clover—Good crop and of good quality.

Prairie Hay—None raised.

Other Grains and Grasses—Fair to good.

Potatoes—Early potatoes not very good and late potatoes not yet dug.

Vegetables—Plentiful and of good quality.

Apples—Medium crop and quality.

Other Fruits—Peaches plentiful and mostly of good quality.

Cattle—Very good and plentiful; prices holding quite firm.

Horses—More colts being raised; good horses scarce; price holding firm.

Swine—Not so many raised this year on account of the high price of corn.

Sheep—Quite a large number raised.

Bees—None raised.

Drainage—Fair; a good deal of tiling done this year.

Lands—In active demand; prices ranging from $85 to $150 per acre.

Report of Fair—Held September 8, 9, 10 and 11, 1908. The fair was very successful; the attendance was good; weather ideal and exhibits were of good numbers with the exception of the stock exhibit, which was smaller than in former years.

CRAWFORD.

A. A. Conrad, Arion, October 1, 1908.

General Condition of Crops and Season—Fair. Had a very cold, wet spring, continuing until nearly midsummer; extremely cool in August and hot and dry in September.

Corn—Fair yield; some of the late corn chaffy.

Oats—Badly rusted; yield about twenty bushels per acre.

Wheat—Yield about seventeen bushels per acre; good quality.

Rye—Very little raised.

Barley—Fair yield.

Millet—Fair; about three ton per acre.

Timothy—Very good; about two and one-half tons per acre.

Clover—Good; from two to three tons per acre.

Prairie Hay—Not enough to count raised.

Other Grains and Grasses—Some few patches of alfalfa; three cuttings yielding from two to two and one-half tons per acre each cutting.

Potatoes—Nearly a failure.

Apples—Frost in May destroyed nearly all the blossoms.

Other Fruits—Small yield.

Cattle—Not many being fed on account of high priced corn.

Horses—About the average number; quite a few young colts.

Swine—Cholera destroyed a large number in some parts of the county.

Sheep—Several herds of fair size; others of only a few head.

Poultry—Average condition.

Bees—Very few bees kept.

Drainage—Very little tile drainage in the county.

Report of Fair—Held September 16, 17 and 18, 1908.

DAVIS.

H. C. LEACH, BLOOMFIELD, OCTOBER 23, 1908.

General Condition of Crops and Season—Crops generally late on account of the excessive rains in May and June.

Corn—Medium acreage; early corn good but late corn light and chaffy.

Oats—Fair acreage; quality inferior; light yield.

Wheat—No spring wheat raised; small acreage of winter wheat but yield and quality good.

Rye—Small acreage; yield fair and quality good.

Barley—None raised.

Flax—None raised.

Buckwheat—None raised to speak of.

Millet—Acreage fair; yield good; quality of hay and seed both good.

Sorghum—Small acreage but good quality.

Timothy—Large acreage; excellent quality of hay; yield of seed fair and quality fair.

Clover—Best crop of hay and seed ever raised in the county.

Prairie Hay—About all gone.

Other Grains and Grasses—Blue grass good; good quality and large yield.

Potatoes—Usual amount planted; yield fair and quality excellent.

Vegetables—Fair, both in quality and quantity.

Apples—Only a few small orchards; late frost in the spring killed most of the blossoms but what there were were of fine quality.

Other Fruits—Small crop of peaches; quality mostly fine; plums fair; pears most all killed by frost; strawberries good.

Cattle—Quite an interest taken in breeding good breeds of cattle; Polled Angus and Shorthorns predominate, although Herefords and Jerseys are raised quite extensively.

Horses—Are extensively bred and raised in this county; draft horses predominate; some road horses are raised.

Swine—Great many raised and farmers take quite an interest in building up the breeding quality. Both Poland China and Jersey Reds are bred extensively.

Sheep—Farmers are taking quite an interest in sheep, both in the quality and quantity. Nearly all our sheep raisers make good money on same.

Poultry—Quantity and quality both good and is rapidly becoming one of the leading industries of the county.

Bees—Wintered well and have done well most of the season, producing quite a good deal of honey.

Drainage—Fair. Farmers beginning to use tiling for flat lands.

Other Industries--Dairy business quite good; farmers selling cream instead of making butter.

Lands—Land ranges in price from $45 to $85 per acre; quite a good deal is selling at $55 to $70 per acre.

Report of Fair—Held September 8, 9, 10 and 11, 1908. General attendance good; the largest crowd present on Thursday, September 10th, that has been known during the history of the fair. Exhibits in all departments were the largest and best on record; races were good.

DELAWARE.

J. J. PENTONY, MANCHESTER, SEPTEMBER 28, 1908.

General Condition of Crops and Season—Good.

Corn—Average crop.

Oats—About twenty-five bushels per acre; quality good.

Wheat—Good but very little raised.

Rye—Good yield; small acreage.

Barley—Fair crop.

Flax—Not any raised.

Buckwheat—Good.

Millet—Very little raised.

Sorghum—Good.

Timothy—Largest crop ever raised; eight to ten bushels per acre.

Clover—Very good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Small yield; good quality.

Vegetables—Good.

Apples—Fair crop.

Other Fruits—Fairly good.

Cattle—Conditions good.

Horses—Plenty of horses; prices twenty-five per cent lower than last year.

Swine—Fully an average number of swine; herds free from disease.

Sheep—More sheep raised than last year and of better quality.

Poultry—Not in as good condition as last year and smaller crop; turkeys scarce.

Bees—Very good this year.

Drainage—Lots of tiling being done.

Other Industries—Dairies; large number of silos being built..

Lands—Steady in price.

Report of Fair—Held September 15, 16, 17 and 18, 1908. Attendance smaller than last year; exhibits in all departments much larger than last year; everybody seemed well pleased with the exhibition.

FAYETTE.

E. A. MCILLREE, WEST UNION, SEPTEMBER 26, 1908.

General Condition of Crops and Season—The year 1908 has been in many ways remarkable. It had one of the mildest winters noted for many years, and with no exception a total absence of storms, both during the summer and winter. There has been no unusual yield of any one crop, still all grains and grasses and root crops have given a good average yield, and pasture has been full better than the average.

Corn—The corn crop this year has been matured under more peculiar conditions, than any year for a long time back. The spring was dry and cold and the seed was unusually poor, being low in vitality, and there was little promise of even a light crop until the first week in September when phenomenal hot weather set in and matured a full average crop of good grain to the surprise of all.

Oats—The oat crop is generally of a good quality, but of light yield. Some pieces not making more than fifteen bushels per acre. This was largely due to poor seed causing a thin stand.

Wheat—Very little wheat is grown in this county. A small portion of this is winter wheat, and the balance spring wheat. The yield was light but of good quality.

Rye—Not much sown but amount sown yielded well and was of good quality.

Barley—Nearly twice as much sown this year than usual and the yield and quality were both good.

Flax—Not much sown in this county and the very few pieces that were sown yielded from eight to ten bushels per acre, quality was average.

Buckwheat—Very little sown and the recent dry weather has damaged that somewhat.

Millet—Not so much sown this year as in ordinary years on account of the large hay crop and abundant pasturage but that which was sown yielded well.

Sorghum—Planted very sparingly and there are only two or three mills in the county where it is worked up in a small way.

Timothy—Good crop of both seed and hay and both were marketed in good condition.

Clover—Quite badly frozen out last year and two years ago and there were not many pieces for hay or seed.

Prairie Hay—Nearly a thing of the past in this county. There are only a very few places where there are any left, and that is nearly all in pastures.

Potatoes—Disappointing crop; the quality has been above the average but the yield was light. Late potatoes were particularly light.

Vegetables—Good crop this year with the exception of turnips, which were cut short by the late drougth.

Apples—Good quality but the yield was light; there was an abundance for home use and about ten car-loads shipped out.

Other Fruits—Were abundant and of a fine quality, particularly blackberries.

Cattle—Have had a good year free from disease, and with an abundance of pasture and hay. Prices have been good.

Horses—Are again on the increase. The number of colts being much larger than at any time during the past ten years. There has been no disease, and the prices have been very high.

Swine—Have been very greatly reduced in numbers during the past year on account of the scarcity of feed, and the pig crop was also light.

Sheep—Are considerably on the increase in the county, and have been free from disease. Prices of wool and mutton have been very satisfactory and more farmers will take up small flocks of sheep.

Poultry—Has never been more healthy or more profitable than during the past year. Prices of eggs have been unusually high but the yield of eggs has been light on account of the scarcity of feed.

Bees—Have very largely increased during the past summer.

Drainage—Has not been given much attention in this county. Only a few have taken it up in a small way.

Other Industries—The increase of automobiles has brought into the county a number of repair shops and this industry is likely to increase. Building on farms has been quite active but building in cities has been quite dull.

Lands—Are greatly increasing in price; rents are also advancing some. This was not noticeable until the corn crop was an assured fact. Quite a large number of farms are held at $100 per acre and a good share of the county is held at $75 or better.

Report of Fair—Held September 1st to 4th and was one of the most successful in the history of the society. The attendance on Thursday reached close to 10,000 people, and the weather for the entire fair was ideal. The policy of the society is to gradually reduce the racing program and increase the platform and other attractions, which appear to be enjoyed by a larger portion of those in attendance. Another feature which the society has given considerable prominence is base ball, which seems to be a drawing card and was found to be a paying feature of the amusement program. Good music was also furnished very liberally. The poultry exhibit was probably the largest at any fair in the north half of the state this year; the large new building built expressly for the poultry exhibit did not provide room enough for those asking space, and arrangements have been made to add another section to the building next season. The cattle exhibit was not so large as on some former years, but the quality was very fine; the reduced exhibit was probably due as much to the high price of grain. which kept many owners from feeding their stock for the show ring, as to any other cause. New cattle barns are among the assured improvements for next year and the society also has in view the building of a large auditorium for such parts of the program as could be held indoors. The building is also intended for a rest room for those who are tired of walking around the grounds, and for protection in case of sudden rains.

The society contemplates the sale of enough additional life membership tickets to cover the cost of the improvements beyond that amount now in the treasury. A few years ago the society was $2,400.00 in debt and after the fair this year it had over $1,000.00 in its treasury. This fair has had exceptionally good business management during the last few years and there is universal good feeling, both in the towns and country for the association. It has been the policy of the present management to conduct the fair on high moral ideas.

FAYETTE.

W. J. BRENNAN, OELWEIN, OCTOBER 3, 1908.

General Condition of Crops and Season—Crops very good and the season could not be better.

Corn—Very good this year and will average about forty to fifty bushels per acre.

Oats—Very good and will average about forty bushels per acre.

Wheat—What little wheat there has been raised around here is very good.

Rye—Very good crop; will average about thirty bushels per acre.

Barley—Very good crop this year; about thirty-five bushels per acre.

Flax—Not much raised in this section but what has been raised is very good.

Buckwheat—Good crop when tried but there is very little raised in this section.

Millet—Quite a good deal raised and a good crop.

Sorghum—Good but very little raised in this section this year.

Timothy—Good crop this year.

Clover—Good crop this year.

Prairie Hay—Good.

Other Grains and Grasses—In general very good.

.*Potatoes*—Not an extra good crop this year; will sell for about fifty to sixty cents per bushel.

Vegetables—Good in general.

Apples—Good crop.

Other Fruits—Good in general.

Cattle—Quite a number raised and a general good increase.

.*Horses*—General increase and in good condition.

Swine—Quite a few raised this year and are looking good, probably due to good new crop.

Sheep—Not very many raised in this section but what we have are good.

Poultry—Good, much raised and prices good for all kinds.

Bees—Not much attention given to bees in this section.

Drainage—More done this season than in past years.

Other Industries—Good.

Lands—Steady increase in land.

Report of Fair—Held August 25, 26, 27 and 28.

FLOYD.

W. B. JOHNSON, CHARLES CITY, OCTOBER 21, 1908.

General Condition of Crops and Season—Crops as a whole are better than for several years past. Season favorable in the early spring but later too much rain, which seriously injured crops on low lands.

Corn—Bumper crop on high dry land, well matured and quality fine.

Oats—Medium yield; quality fair but do not hold out in weight.

Wheat—Very little raised; quality and yield about average.

Rye—Small amount raised and about an average yield.

Barley—Quality and yield poor.

Flax—Very little grown.

Buckwheat—Yield fair and about the usual amount grown.

Millet—Large amount sown; yield and quality excellent.

Sorghum—Very little raised.

Timothy—Acreage above the average; yield good; quality No. 1.

Clover—Large acreage; unusually good stand.

Potatoes—Good yield and fine quality where planted early; late planting effected by dry weather.

Vegetables—Very much better than last year.

Apples—Less than average crop; quality good.

Other Fruits—Good crop of small fruit with the exception of raspberries.

Cattle—In good condition throughout county; small number will be fed; quality of stock being improved each year.

Horses—Usual number raised; prices lower than a year ago.

Swine—Number of old hogs on hand below the average; large number of spring pigs which are looking fine.

Sheep—Only small number raised in county.

Poultry—Increased number in county; large amount of poultry and eggs marketed.

Bees—None to speak of.

Drainage—Large amount of tiling being done in county.

Other Industries—Gasoline traction engine factory has doubled capacity of plant during past year, and is employing many additional men. Nurseries growing each year and they also are employing more men; other factories gradually increasing.

Lands—Considerable land changing hands; prices about the same as a year ago.

Report of Fair—Held at Charles City, September 8, 9, 10 and 11. More stock exhibited than heretofore; other departments about the same as last year; fair was a success financially and attendance was good.

GRUNDY.

C. E. Thomas, Grundy Center, October 24, 1908.

General Condition of Crops and Season—Crops above the average in yield; quality good. Season favorable for growing crops; no bad storms but plenty of rainfall.

Corn—Yield from forty to sixty-five bushels per acre; quality very good.

Oats—Yield from thirty-five to fifty bushels per acre; quality good.

Wheat—Small acreage; quality good.

Rye—None raised.

Barley—Good crop; fine quality.

Flax—None raised.

Buckwheat—None raised.

Millet—Only small amount raised; quality good.

Sorghum—Very small amount raised.

Timothy—Excellent crop; quality good.

Clover—Good crop.

Prairie Hay—None; some slough hay of fair quality.

Potatoes—Increase in acreage over former years; yield from eighty to two hundred twenty-five bushels per acre; quality not as good as last year.

Vegetables—Good crops.

Apples—Orchards small; yield good.

Other Fruits—Good crop of all small fruits.

Cattle—Good many in the county and in fine condition.

Horses—Good grades; plenty of draft horses; drivers scarce.

Swine—Great number in county; no cholera reported.

Sheep—Not many in the county.

Poultry—Great number of all the best varieties.

Bees—Not many in the county; yield of honey good.

Drainage—County is well drained by small streams.

Other Industries—Brick and tile factories doing a thriving business.

Lands—Rolling prairie with good natural drainage; selling from $100 to $140 per acre.

Report of Fair—Held at Grundy Center, September 8, 9 and 10. Weather fine; attendance good; exhibits good and fair was a financial success.

GUTHRIE.

THOMAS E. GRISELL, GUTHRIE CENTER, OCTOBER 24, 1908.

General Condition of Crops and Season—The season was very favorable for an average crop.

Corn—Large acreage and an average crop of good quality; the quality being far better than the crop of 1907.

Oats—Quality of grain excellent but small yield to the acre.

Wheat—Winter wheat went about thirty bushels to the acre and was of fine grade; spring wheat went from ten to fifteen bushels to the acre.

Rye—Not enough sown to make an estimate.

Barley—Not enough sown to make an estimate.

Flax—None raised.

Buckwheat—None raised.

Millet—Small acreage; only sown on wet bottom lands.

Sorghum—None raised, except for forage.

Timothy—A bumper crop and saved in good condition.

Clover—Small crop, and used mostly as a fertilizer.

Prairie Hay—Guthrie county has passed the wild hay period.

Potatoes—Fair crop.

Vegetables—The season was favorable for a large crop.

Apples—Not enough to base an estimate.

Other Fruits—Average crop of berries; plums and cherries a failure on account of late frost in the spring.

Cattle—Cattle will go into the winter in fine condition; not so many steers being fed as usual on account of the high price of corn and stock cattle.

Horses—The high prices for horses in the past few years has drained the county of its aged stock but the crop of colts coming on will soon bring up the quota of saleable horses.

Swine—The cholera has played havoc with the hogs in this county the past summer and will sadly shorten the number for 1908.

Sheep—Only a few flocks of sheep in the county.

Poultry—This is one of the main industries of tne farmers' wives of the county and poultry of improved breeds and increasing numbers are raised.

Bees—The season has been favorable for the storing of honey and the bee-keepers are satisfied with the output.

Drainage—A large amount of tile drains have been put in this season on the level lands and bottom lands of the county.

Lands—Are selling from $60 to $200 per acre.

Report of Fair—Held September 29, 30 and October 1 and 2. It was well attended and the exhibits were up to former years.

HAMILTON.

F. A. P. TATHAM, WEBSTER CITY, OCTOBER 31, 1908.

General Condition of Crops and Season—Average crop and season.

Corn—Thirty-five bushels per acre.

Oats—Thirty bushels per acre.

Wheat—Twenty-five bushels per acre.

Rye—None raised.

Barley—Twenty-five bushels per acre.

Flax—None raised.

Buckwheat—None raised.

Millet—None raised.

Sorghum—None raised.

Timothy—Average crop.

Clover—Average crop.

Prairie Hay—Average crop.

Potatoes—One hundred fifty bushels per acre.

Vegetables—Average crop.

Apples—Average crop.

Other fruits—Average crop.

Cattle—About average with other years.

Horses—About average with other years.

Swine—About average with other years.

Sheep—About average with other years.

Poultry—About average with other years.

Bees—About average with other years.

Drainage—More than average.

Other Industries—More than average.

Lands—About $10 higher per acre.

Report of Fair—Held September 8, 9, 10 and 11, 1908. Good weather; fair races; good exhibits and a fair amount of interest but a very light attendance.

HANCOCK.

JAS. L. MANUEL, BRITT, SEPTEMBER 30, 1908.

General Condition of Crops and Season—Crop of corn very irregular and spotted; some early pieces of corn fairly good crop but late plantings did not mature. Oats light weight and about half a crop; barley very good; hay good, and pastures have been good.

Corn—Sixty per cent of an average crop; two-thirds of same safe from frost.

Oats—Light yield and weight; price forty-four cents per bushel.

Wheat—Good crop and good quality; price eighty cents per bushel.

Rye—Not much grown; not enough to give an estimate.

Barley—Good crop; price about fifty cents.

Flax—Not much raised here.

Buckwheat—Not any to amount to anything.

Millet—Fair.

Timothy—Good.

Clover—Good.

Prairie Hay—Good; not much here.

Other Grains and Grasses—All grasses good.

Potatoes—Fairly good crop; some rotting in the ground.

Vegetables—Good.

Apples—One-half crop.

Other Fruits—Good.

Cattle—About the average number of cattle in the county.

Horses—About normal.

Swine—Less than an average owing to the scarcity of corn last year.

Sheep—Increasing.

Poultry—About an average.

Bees—About normal.

Drainage—More than usual amount being done.

Other industries—No change.

Lands—Values from $60 to $100 per acre.

Report of Fair—Held September 22, 23 and 24, 1908.

HARDIN.

H. S. MARTIN, ELDORA, SEPTEMBER 17, 1908.

General Condition of Crops and Season—Corn has been late but dry warm weather has put most of it out of the way of danger from frost.

Corn—Average.

Oats—Twenty-five to fifty bushels per acre.

Wheat—Fair; not much raised.

Barley—Good.

Flax—None.

Buckwheat—None.

Sorghum—Good.

Timothy—Good; one-half to two tons per acre.

Clover—Good.

Prairie Hay—None.

Potatoes—Poor crop; too dry.

Vegetables—Average.

Apples—Eighty per cent of an average crop.

Other fruits—Fair.

Cattle—Good condition.

Swine—Healthy.

Sheep—Healthy.

Poultry—Healthy.

Lands—Selling from $90 to $125 per acre.

Report of Fair—Held September 1-4 inclusive.

HARRISON.

W. H. WITHROW, MISSOURI VALLEY, OCTOBER 19, 1908.

General Condition of Crops and Season—Early rains very much retarded planting, and consequently all planting was late; the corn crop will be much lighter than last year, although the acreage will be about the same.

Corn—Crop will be lighter than for several years, particularly on the low lands where the planting was delayed on account of too much rain.

Oats—The yield will be about the average and of fair quality.

Wheat—An increased acreage, particularly in winter wheat; yield and quality was very good for the season; farmers are very much encouraged on this crop, and will sow considerably more this fall and winter.

Rye—Acreage about an average with former years; quality and yield fair.

Barley—Acreage about same as former years; yield and quality only fair.

Flax—Very little raised in this county.

Buckwheat—Acreage not very heavy; yield and quality about an average with last year.

Millet—Very good crop on high lands but very light on the low lands on account of too much rain in the spring.

Sorghum—An average acreage with about an average yield.

Timothy—An increased acreage over last year and a good crop.

Clover—Acreage about the same as in former years with a good yield on land that was not too wet.

Prairie Hay—The usual good yield, except where high water prevailed.

Potatoes—Too much rain in the spring made planting late; quality not up to the average; yield much lighter than usual.

Vegetables—Did very well, with a good yield where not damaged by too much rain.

Apples—Very good crop but not so good as in 1906; several young orchards produced good crops and more trees will be planted next spring.

Other Fruits—Very good crop of strawberries and blackberries, but other small fruit did not appear to yield good.

Cattle—Very little summer feeding in this county but prospects are that a large number will be fed the coming winter.

Horses—We have a very good grade of horses and farmers are paying more attention to the raising of a better grade each year.

Swine—We always have a large number of hogs in this county and more attention is given each year to the matter of raising better grades the Duroc breed appearing to be the choice, although the Poland China is well liked.

Sheep—A few more are to be fed here during the coming winter, but that industry does not appear to interest the average farmer very much, but more attention will be given to the raising of well bred sheep the next year.

Poultry—A very good year for poultry where good quarters were provided. A big loss to young stock resulted in the early spring rains on account of poor protection; not much attention being given to raising anything but common stock.

Bees—About the usual number interested in this industry with the average production of honey and of good quality.

Drainage—Our drainage system was not completed until late in the spring and not much benefit was derived excepting in the higher parts of the system or district where a very much improved condition was noticeable; some of the land produced corn this year that had not been seen for twenty years.

Lands—Values remain stationary, excepting those lands already benefited by the drainage system, which have increased in value. Eastern speculators have bought all cheap lands on the market and will hold for higher prices.

Report of Fair—Held October 6, 7, and 8; the 6th being entry day. On the 5th it rained nearly all day and prospects for a successful fair did not look very bright, but on the 6th the clouds passed away and we thought we would have a big crowd, especially on the 7th, but a cool wind from the northwest made the atmosphere too cold and damp for the people to turn out in attendance, consequently the gate receipts were much lighter than last year.

The farmers, upon whom much depends for a successful fair, failed to bring farm products for exhibition in the floral hall and that part of our fair was nearly a failure, although what little farm produce was brought in was very good.

The textile fabric department was also very light but we presumed that the threatening weather deterred many from making entries from the fear that their products for that department might be ruined by rain.

The officers of the association are very much discouraged over the future of the Harrison County Agricultural Society, knowing that if the farmers will do nothing toward trying to make a successful meeting that the society will be compelled to cease business.

HENRY.

O. N. KNIGHT, MT. PLEASANT, OCTOBER, 1908.

Corn—The corn crop in this county is much better than was expected from the general conditions when it was planted; there was a good deal of late planting and the farmers could not expect it all to mature but owing to the extremely hot dry weather during August and September, and the lateness of the frost, almost all of the corn matured and the yield will be about seventy-five per cent of a full crop.

Oats—The oats crop was very light this year. The usual acreage was sown but the yield was not over one half what it should have been and the quality was light.

Wheat—Good, and an increased acreage will be sown next year.

Rye—The usual small acreage was sown but the yield was very satisfactory.

Barley—Not enough raised to make a report on.

Flax—None raised in the county.

Buckwheat—Not much raised; do not know at this time what the yield will be.

Millet—Very good.

Sorghum—Very good, but only a small amount raised in this county.

Timothy—An excellent crop and well harvested; there is but very little damaged hay in this county and there is as heavy a crop as we ever had.

Clover—Very heavy; many acres of the second crop was cut for seed and is yielding good.

Prairie Hay—None.

Other Grains and Grasses—Bluegrass is the principal pasture here and is always good.

Potatoes—Very good quality but not very large yield; about sixty per cent of an average crop.

Vegetables—A very good crop.

Apples—About one-fourth of a crop.

Other Fruits—There was a very good crop of peaches in this vicinity this season; plums, berries, grapes, cherries and other small fruit were a very fair crop.

Cattle—Cattle are generally in fine condition but on account of the high price of corn there will not be as many fed here as usual; we had a fine showing of cattle at our fair and the quality of cattle raised in this county are the very best.

Horses—Horses are extensively raised here and the farmers are taking quite an interest in "good breeding" and there is an exceptional high grade of horses in this county. The heavy draft horse is the money maker for the farmer as they always are ready sale at a good price. The horses shown at our fair were a fine lot and worthy of notice on any fair ground.

Swine—A large number raised; well bred and profitable.

Sheep—Sheep are quite numerous in this county; the price is not what it was last year on account of the decline in the price of wool. The Shropshire is the popular breed and well bred ones still sell at a very good price.

Poultry—Everybody raises poultry and some quite extensively. A good profit is realized from the money invested in poultry and the more attention paid to the poultry department the larger the returns. There is quite an interest taken in pure bred stock and the grade of poultry is generally very good.

Bees—Only a few kept here, but they have done well this summer.

Drainage—In general is good; the flat lands are tiled and are very productive.

Other Industries—Are all in a prosperous condition; brick and tile factory; stone quarry; cement block and other industries are all busy.

Lands—Are very high and selling readily and rapidly at $75 to $150 per acre.

Report of Fair—Held August 11-15 inclusive and was a grand success. We had a good display in every department; we had one hundred thirty-six horses shown for premiums; fifty-five head of cattle; seventy-five fine hogs and fifty-three head of sheep. We also had about eighty speed horses on the ground and the racing was good. The art hall was well filled and we had an "all-round" good show. The attendance was large every day and after paying all our obligations in full and $800 for improvements we have $1,000 in cash left.

HENRY.

O. E. Wilson, Winfield, September 22, 1908.

General Condition of Crops and Season—Part of season dry; mid summer wet; corn bumper crop, badly lodged; oats about seventy per cent of an average crop and very little wheat raised but what was raised was fine.

Corn—Bumper crop.

Oats—Not over seventy per cent of an average crop; all harvested.

Wheat—Condition, quality and yield all fine but very little raised.

Rye—Very little raised.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—Fine condition; very little being harvested.

Sorghum—Very scarce; not yet harvested.

Timothy—Very fine as hay and seed.

Clover—Very fine as hay; seed not over sixty per cent of a crop.

Prairie Hay—None.

Other Grains and Grasses—None.

Potatoes—One hundred ten per cent of an average crop; all harvested.

Vegetables—Fine; easily one hundred ten per cent of an average crop.

Apples—Not over sixty per cent of an average crop.

Other Fruits—Peaches very abundant; other fruits plentiful.

Cattle—Not so plentiful; none on feed.

Horses—County is full of horses of a high class; stiff prices prevail.

Swine—Neglected; not over sixty per cent of an average number; no disease.

Sheep—Usual number of lambs; free from disease.

Poultry—Full number chickens; turkeys light.

Bees—Honey crop immense.

Drainage—The county is supposed to be underlain with tile but the work is going on just the same; we raise a crop rain or shine.

Lands—All tillable, except orchards and groves; sells from $140 to $200 per acre.

Report of Fair—September 15, 16, 17 and 18. Attendance very large; very heavy showing of horses, cattle and hogs; sheep light; art hall light; agricultural hall very good; crowd very orderly and weather hot, dry and very dusty.

HUMBOLDT.

JOHN CUNNINGHAM, HUMBOLDT, OCTOBER 10, 1908.

General Condition of Crops and Season—Crops generally good; season wet until July; quite dry since that date.

Corn—Smaller acreage than usual but a fair yield; probably thirty to fifty-five bushels per acre gathered.

Oats—From fifteen to fifty bushels, probably an average of twenty-five bushels per acre; quality poor.

Wheat—Small acreage; good crop.

Rye—I know of none.

Barley—Small acreage; average crop.

Flax—Small acreage; average crop.

Buckwheat—I know of none in the county.

Millet—Very little grown.

Sorghum—Very little grown.

Timothy—Good crop.

Clover—Good crop.

Prairie Hay—Heavy crop and put up in good shape.

Other Grains and Grasses—All other grasses and grains yielded well

Potatoes—Fair crop.

Vegetables—Average crop.

Apples—Small crop of winter apples; fall varieties were a good crop.

Other Fruits—Plums and small fruit were a light crop.

Cattle—Condition good; quite a number condemned during the year by tuberculin test.

Horses—In good condition; prices not so high as a year ago.

Swine—Small number of pigs; generally in poor condition; very little disease reported.

Sheep—In good condition and free from disease.

Poultry—Small number of birds but in good condition.

Bees—Doing well; not many in county.

Drainage—A vast amount of public drainage has been done during the year. Private drainage has only nicely started but preparations are being made to drain most all low lands.

Other Industries—Chicken picking establishment not doing as large a business as last year; creameries doing more business; considerable building has been done during the year.

Lands—Have increased in value considerable during 1908; prices range from $65 to $125.

Report of Fair—Held September 12, 13, 14 and 15. Weather good; attendance good except last day. There were good exhibits in all departments except in the agricultural department and there was no excuse for the poor showing in that department.

IOWA.

Alex McLennan, Marengo, October 26, 1908.

General Conditions of Crops and Season—The quality of crops in general are good and the season very favorable for maturing crops.

Corn—About ninety per cent of an average crop; good quality; not harmed by frosts and yield good.

Oats—Light in yield and quality; average about thirty bushels to the acre; straw and grain look bright.

Wheat—But very little grown; yield from fifteen to twenty bushels per acre and of excellent quality.

Rye—But very little grown but good yield and quality.

Barley—About the usual acreage and fair quality.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Very little grown.

Sorghum—Very little grown but of good quality.

Timothy—Very heavy crop and of good quality. This year's crop possibly the heaviest ever had in this section.

Clover—Crop very heavy and much harvested for hay; seeding poor last spring.

Prairie Hay—None in the county.

Potatoes—Yield good and of good quality; quite a number of carloads shipped out of the county.

Vegetables—About the average amount raised and quality good.

Apples—Fair crop; good showing at fair.

Other Fruits—Peaches good in most localities where grown; number of trees increasing. Light crop of plums but very good crop of cherries.

Cattle—Not as many on exhibition at fair as last year but the breeding and quality was of the best; Aberdeen Angus, Herefords and Short horns predominate. General conditions good.

Horses—Good demand and high prices for horses; tendency among farmers to raise more horses and raise only the best. Very good showing at the fair.

Swine—Large number; better than last year; all well bred; no cholera in the county and prices good.

Sheep—Not generally raised among the farmers.

Poultry—Increasing interest taken in poultry raising; larger number on exhibition than usual.

Bees—Very few stands in county.

Drainage—Considerable wet land has been reclaimed in the past year by tiling.

Other Industries—Woolen and flouring mills report good business; canning factories did considerable better than last year; creameries have done an exceptional business and brick and tile factories are behind with orders.

Lands—Improvement in methods of cultivation and more attention given to rotation of crops and fertilizing. The use of manure spreaders increasing considerable over last year; more intensive farming. Farm lands range in price from $90 to $150 per acre.

Report of Fair—Held at Marengo, September 8, 9 and 10. Ideal weather; good attendance; not as large exhibits of stock and poultry as last year but of better quality. Exhibit of farm products larger than last year and of better quality, while the exhibit of fine arts was the largest and best ever on the grounds.

IOWA.

J. P. Bowling, Victor, September 19, 1908.

General Condition of Crops and Season—Good.

Corn—Will be a splendid yield in this vicinity; good quality and mostly all out of danger from frost at this writing.

Oats—Good quality and fair yield.

Wheat—Not much raised but of good quality.

Rye—Fair crop and good quality.

Barley—Fair crop and good quality.

Flax—None raised in this vicinity.

Buckwheat—Very little raised.

Millet—Very little raised.

Sorghum—Very little raised.

Timothy—Good crop and good quality.

Clover—Fair crop; price low.

Prairie Hay—Not much in county.

Other Grains and Grasses—Good.

Potatoes—Fair crop; good prices.

Vegetables—Average amount raised and of good quality.

Apples—Good crop.

Other Fruits—Light crop of cherries and plums but peaches good.

Cattle—Fine display at our fair.

Horses—Good; many sold at high prices.

Swine—Good prices and good reports from all over the county.

Sheep—Not many raised.

Poultry—A growing and profitable industry.

Bees—Very few stands.

Drainage—Considerable tiling done this year.

Other Business—Creamery has done a fine business all year.

Lands—Prices high.

Report of Fair—Held at Victor, August 11, 12 and 13. The best and most successful fair ever held by the society; exhibits were large in all departments and the most horses in the races ever seen in an Iowa county fair.

IOWA.

Charles Fletcher, Williamsburg, October, 1908.

General Condition of Crops and Season—The crop conditions throughout Iowa county were above the average this season and I am pleased to note that the farmers generally are improving along all lines of farm operations.

Corn—The corn crop will yield above the average owing to greater care in the selection of seed and in the uniformity of the stand.

Oats—A fair crop and generally of good quality.

Wheat—But little raised in this county; but one field of about twenty acres that was observed by the writer.

Rye—None sown to speak of.

Barley—Occasionally a small field of good quality.

Flax—Not sow any more in this county.

Sorghum—Some raised in the southeast townships of the county and is of good quality.

Timothy—This crop especially good this year and a very large acreage cut for seed.

Clover—Especially good crop this year; large acreage cut for seed.

Prairie Hay—None that I know of.

Potatoes—The quality is above the average but the yield rather below normal.

Apples—The fall varieties excellent in both yield and quality.

Other Fruits—The crop of peaches excelled all former years, especially in the south half of the county.

Cattle—Generally high in grade; many herds of pure bred, consisting of Aberdeen-Angus, Herefords and Shorthorns.

Horses—I question if there is a section or county in the state that can show better horses generally than we have in our county.

Swine—Poland China and Jersey Red are the leading breeds. There are a few fine herds of Chester Whites and think there is a growing demand for them.

Sheep—Too few to be considered.

Poultry—This is a great industry and the greatest money producer in Iowa county today is the hen, for she brings in more dollars in proportion to expenditure of feed and labor than any other industry; our dealers paid the farmers of the county, during the last season, the sum of $88,000 for poultry and poultry products.

Drainage—Much attention has been given to drainage and practically all waste lands have been redeemed by a system of tile drainage.

Lands—Values have increased, ranging from $100 to $160 per acre, depending upon the location.

Report of Fair—The Williamsburg Fair Association held its eleventh annual exhibition on September 15, 16 and 17. The secretary is pleased to note the growing interest that is manifested in the educational advantages accompanying this well organized fair. The lessons learned at the annual fair, through the friendly contests of display, have a tendency to encourage a spirit in each exhibtor to excell in what is produced on the farm, in the orchard, in the field, and in the home. Each department of the fair opens up a new and interesting study for consideration and discussion, the educational influences of which are beneficial in bringing new ideas before the mind which may be developed into practical application. You may rest assured that when the intelligent farmer enlists as an exhibtor or even as an earnest visitor at the fair the seeds of improvement have been sown, and the results will be fully indicated in the future by improved live stock, farm machinery, and improved grains, vegetables, fruits, etc.; in fact by a general spirit of advancement along all lines of agricultural development.

It has been the business of the Williamsburg Fair Association to preach the gospel of pure bred stock persistently, until the live stock on all of our Iowa county farms shall show unmistakeable evidence of such breeding. The pure bred stock industry has never been under more favorable conditions for advancement and there is no better evidence of this than to see the young men of the farms making a start in pure bred stock, indicating enterprise and intelligence and a better understanding of what is practical in present high priced land values.

JACKSON.

B. D. Ely, Maquoketa, September, 1908.

General Condition of Crops and Season—Good.

Corn—Very good crop.

Oats—Good quality but not very large yield.

Wheat—Good but very little sown.

Rye—Not much planted.

Barley—Very good.

Flax—None raised in this county.

Buckwheat—Good.

Millet—Not much raised.

Sorghum—Not much raised.

Timothy—Good, large yield.

Clover—Good.

Prairie Hay—Not much in this county.

Other Grains and Grasses—Very little raised in this county.

Potatoes—Very good, big yield.

Vegetable—Good.

Apples—Excellent.

Other Fruits—Big crop of all fruits excepting plums.

Cattle—Good quality of cattle.

Horses—Good many horses raised and good quality.

Swine—Good quality and a great many raised.

Sheep—Not many.

Poultry—Raised extensively and of good quality.

Bees—Very few.

Drainage—Good natural drainage.

Other Industries—Two lime-kilns and a canning factory.

Lands—Increasing in value every year.

Report of Fair—Held at Maquoketa September 1, 2, 3 and 4, 1908. Very successful fair; large exhibits in every department; fine weather; fast track and very good racing.

JEFFERSON.

D. R. BEATTY, FAIRFIELD, OCTOBER 24, 1908.

General Condition of Crops and Season—Good.

Corn—Good; large acreage.

Oats—Fair; fair acreage.

Wheat—Good; small acreage.

Rye—Good; small acreage.

Barley—Good; small acreage.

Flax—None sown.

Buckwheat—Small acreage.

Millet—Small acreage.

Sorghum—Small acreage.

Timothy—Good; fair acreage.

Clover—Good; good seed crop.

Prairie Hay—None.

Potatoes—Fair.

Vegetables—Good.

Apples—Good crop.

Other Fruits—Good.

Cattle—Good.

Horses—Good; best show for years.

Swine—Good.

Sheep—Small.

Poultry—Good.

Bees—Small.

Drainage—None except farm tile; large amount of tile being laid.

Other Industries—Good.

Land—In good state of cultivation and producing good crops.

Report of Fair—Held September 8, 9, 10 and 11, 1908. One of the best showings of stock had for several years.

JOHNSON.

GEORGE A. HITCHCOCK, IOWA CITY, OCTOBER 2, 1908.

General Condition of Crops and Season—Very wet in the spring; so much so that getting the crops in was much delayed and early crop of corn was a poor stand and weedy before it was plowed the first time.

Corn—Notwithstanding a cold spring a warm September has made a good crop.

Oats—Were rusty so that the yield was not up to the average.

Wheat—Good; some yields reported thirty bushels to the acre.

Rye—Fair.

Barley—Good; both in quality and yield.

Buckwheat—Not much raised.

Timothy—Good; heaviest crop in years and well filled out.

Clover—Very heavy; rain made it a hard crop to handle.

Prairie Hay—None here to amount to anything.

Potatoes—Hardly an average.

Vegetables—Most all were good.

Apples—Good; more than an average crop of fall apples; not many winter ones raised.

Other Fruits—Good; peaches a banner crop.

Cattle—Not many on feed but the pastures have been good and stock cattle are in good flesh.

Horses—Scarce but good prices prevail.

Swine—Plenty; the price of old corn being high makes the farmers put them on the market as soon as possible.

Sheep—Not so many as usual.

Poultry—Farmers are taking more interest in this business as a source of profit than formerly.

Bees—Swarmed a good deal but made an extra amount of honey.

Drainage—More tile put in each year and consequently more land reclaimed.

Lands—Sell at good prices; prices range from $100 to $200 per acre.

Report of Fair—Held August 31, September 1, 2 and 3, 1908. Had nice weather; good showing of all kinds of stock except cattle; attendance fair, and had Prof. A. V. Storm with us one day and he gave a lecture which was very much enjoyed by the people, and we contemplate having another such feature next year.

JONES.

J. J. LOCHER, MONTICELLO, OCTOBER 14, 1908.

General Condition of Crops and Season—Good, with the exception of small grain.

Corn—Good stand and yield; very little soft corn.

Oats—Fair yield but of light quality.

Wheat—Very little raised.

Rye—Very little raised but good.

Barley—Very good.

Flax—None raised.

Buckwheat—Little, if any, raised.

Millet—Very little raised; have seen none.

Sorghum—Good.

Timothy—Very good.

Clover—Excellent yield of both hay and seed.

Prairie Hay—Little, if any.

Other Grains and Grasses—Good.

Potatoes—Good, but only fair yield.

Vegetables—Good.

Apples—Fair.

Other Fruits—Fair.

Cattle—Jones county is in the midst of a dairy country; good.

Horses—Very good.

Swine—Hogs thin, occasioned by lack of corn of the 1907 yield.

Sheep—Few, if any.

Poultry—Many chickens raised.

Bees—Very few hives.

Drainage—Excellent; much tiling done.

Other Industries—Good.

Lands—Land advancing rapidly.

Report of Fair—Held August 31, September 1, 2, 3 and 4. Excellent weather; large attendance and was a financial success.

JONES.

L. W. RUSSELL, ANAMOSA, OCTOBER 15, 1908.

General Condition of Crops and Season—Season very dry, damaging small grain.

Corn—Crop about average and better than last year; quality fine.

Oats—Fair crop; quality good but runs a little light.

Wheat—None.

Rye—Very little

Barley—Not much raised but what there is is of good quality and yield.

Flax—None.

Buckwheat—None.

Millet—None

Sorghum—None.

Timothy—Good crop; quality fine.

Clover—Good.

Prairie Hay—None.

Potatoes—About one-half a crop; quality good.

Apples—Large crop.

Cattle—Not much feeding being done this year on account of the high price of grain; plenty of milk cows.

Horses—More than ever; prices low.

Swine—Nearly all shipped out.

Sheep—Very few in county.

Poultry—Interest in poultry on the increase.

Bees—Not many.

Drainage—Farmers take great interest in tiling and are gradually draining all wet land.

Lands—Prices on the increase and many farms changing hands.

Report of Fair—Held August 26-30, inclusive. More stock than ever before; showing in all departments fine; people well pleased; large attendance first three days but did not give a fair on the last day on account of rain.

KEOKUK.

GEO. A. POFF, WHAT CHEER, OCTOBER, 1908.

General Condition of Crops and Season—Good; above the average.

Corn—Large acreage; large yield, about forty to sixty bushels per acre.

Oats—Will average from twenty-five to thirty-five bushels to the acre and is of excellent quality.

Wheat—Larger acreage than for some time past; yielded from twenty to fifty bushels per acre.

Rye—Small crop.

Barley—Small acreage but good quality; yield about twenty bushels per acre.

Flax—None.

Buckwheat—None.

Millet—Small acreage.

Sorghum—Very little raised.

Timothy—Good crop.

Clover—Good; average two tons to the acre.

Prairie Hay—Good yield.

Other Grains and Grasses—Good; fall pastures very good.

Potatoes—Light; selling at seventy five cents per bushel.

Vegetables—Very plentiful and of excellent quality.

Apples—Fair crop and are bringing good price.

Other Fruits—Good yield.

Cattle—Cattle are in fine condition; several large breeders here.

Horses—Doing well; we have several large breeders and importers of imported stock in this county.

Swine—A great many raised and of the best breeds.

Sheep—Are in fine condition; not so many raised as in former years.

Poultry—Increasing rapidly and is fast becoming one of the profitable industries of the farm.

Bees—Average crop of honey.

Drainage—A great deal of tiling is being done at present.

Lands—Selling for $75 to $125 per acre.

Report of Fair—Held September 7, 8, 9 and 10. The most successful and the largest attended fair in the history of the society, 7,324 tickets being sold on Wednesday, September 9. Weather was ideal throughout fair; exhibits of horses, cattle and swine, large; races good and attractions all high grade.

KOSSUTH.

W. E. McDonald, Algona, October 27, 1908.

General Condition of Crops and Season—Early season very cold and wet, making farming conditions very bad but crops are about a sixty per cent average.

Corn—Only about fifty per cent of the usual acreage planted in this county and about seventy-five per cent of this is good sound corn, balance being cut for feed.

Oats—Will average about fifty per cent of the usual crop; early oats being much better than the late sown ones.

Wheat—Very little sowed but crop was fine.

Rye—Good crop but little sown.

Barley—Yield good; quality good.

Flax—Fine crop; not much sown in the county.

Buckwheat—A very fair crop; quality good.

Millet—Fine; yield about three tons to the acre.

Sorghum—Yield good; sown much with millet for cow feed.

Timothy—Good crop, averaging about one and one-half tons per acre.

Clover—Very fair crop.

Prairie Hay—Fine.

Other Grains and Grasses—Not much grown here.

Potatoes—Yield about seventy per cent of usual crop; quality good.

Vegetables—Good.

Apples—Some orchards loaded while others are entirely bare owing to early frosts.

Other Fruit—Good.

Cattle—Did better in the latter part of the season, owing to improved conditions of the weather; prices low but farmers are feeding quite a good many for Christmas delivery.

Horses—Fine; prices ruling strong and demand good for heavy farm horses.

Swine—Very little trouble, if any, from cholera among the hogs of this county and farmers as a rule are paying off their debts from this source alone.

Sheep—Too wet in early season for sheep but the wool clip was fair and many farmers keeping a few to trim up the pastures and fence corners; prices low.

Poultry—The usual amount raised this year.

Bees—The few hives kept in this county are paying well this year owing to the immense vegetation on account of the wet spring weather.

Drainage—We are just commencing; farmers are busy putting out tile and more was used this year than in all of the preceding years put together.

Other Industries—Much attention has been given to the public roads of the county this year and the townships and county supervisors are co-operating with the farmers in tiling them out and keeping grades in repair.

Lands—Values are some higher than last year; farms selling from $50 to $85 per acre and there seems to be a good demand for better tenants and better tiled farms.

Report of Fair—Held August 8, 9, 10 and 11, 1908. The exhibits far exceeded anything ever shown at our county fair; the stock and farm products being specially selected for prize winning. The races were well attended and some of the best horses in Iowa entered in these races. Attendance was the largest ever known; premiums were paid in cash and all exhibitors seemed satisfied with the treatment received. No gambling of any kind was allowed on the grounds.

LEE.

CHRIS HAFFNER, DONNELSON, OCTOBER, 1908.

General Condition of Crops and Season—Too much rain in the fore part of the season but some of the crops fairly good.

Corn—Seventy-five per cent of an average crop.

Oats—Very light yield; quality poor.

Wheat—Very good yield; quality good.

Rye—Very good; not much grown.

Barley—None.

Flax—None.

Buckwheat—Very little grown.

Millet—None.

Sorghum—Quality good; not much grown.

Timothy—Large crop; quality fair.

Clover—Large yield; quality good.

Prairie Hay—None.

Other Grains and Grasses—Bluegrass pastures good.

Potatoes—Light crop owing to wet spring.

Vegetables—Fair yield; quality good.

Apples—Light crop; quality fair.

Other Fruits—Very good crop of peaches of good quality.

Cattle—Shorthorns and Polled Angus predominate.

Horses—Roadsters and Percherons predominate.

Swine—Chester Whites, Poland Chinas and Duroc Jerseys predominate.

Sheep—Shropshire and Delaines are the principal breeds.

Poultry—All kinds raised in large numbers.

Bees—Very few left.

Drainage—Good.

Other Industries—Thriving but plenty of room for more.

Lands—Range in price from $80 to $125 per acre.

Report of Fair—Held at Donnelson, September 15-18, inclusive. Exhibits were extra good in all departments; weather was fine throughout the entire fair; attendance was large and in every particular the fair was a success.

LEE.

JOHN WALLJASPER, WEST POINT, OCTOBER 5, 1908.

General Condition of Crops and Season—The season opened up fair but turned out to be cold and wet, delaying the planting of corn, our main staple. Weather was good during harvesting and the fall, up to this writing, was the best to mature the corn crop that we have had for years.

Corn—The heavy rains and the wet spring weather delayed planting in general, consequently there is a lot of late corn, which matured well during the hot, dry period of August and September.

Oats—Fair; light weight but fair yield.

Wheat—Fair, both in yield and quality.

Rye—But very little sown.

Barley—Hardly any sown.

Flax—None sown.

Buckwheat—Will be a fair yield and of good quality.

Millet—But very little sown.

Sorghum—Turning out very fair.

Timothy—Large crop and of good quality.

Clover—An immense crop of both hay and seed.

Prairie Hay—None.

Other Grains and Grasses—Bluegrass does well for pasture.

Potatoes—Fair crop; not as good as last year.

Vegetables—Pretty fair crop; cabbage not as good as last year.

Apples—Crop was cut short by the late spring frost.

Other Fruits—Late spring frost cut short the crop.

Cattle—Are improving yearly; the Shorthorns are the leading breed; Herefords and Polled Angus a close second. Some dairy breeds, but this is not as much a dairy as a fat cattle county.

Horses—Are high in price and our farmers are going into the horse industry stronger than ever; Percherons, Clydes and Belgians take the lead in draft classes. All work and road horses are bred quite extensively.

Swine—There is much interest taken in this industry, the farmer's "gold mine," Poland Chinas, Duroc Reds, and Chester Whites, being the leading breeds.

Sheep—Fine, middle and coarse wool sheep are raised in this section; the middle wool taking the lead. This is an industry in which quite a number of farmers are making good money.

Poultry—Poultry is the "expense payer" of the farm and the farmer's wife is making it pay nowadays at the prevailing price of eggs and birds. Brahmas, Leghorns, Buff Cochins, Plymouth Rock and all the other leading breeds are represented in this section.

Bees—Quite a number kept and a large amount of honey made this year on account of the heavy crop of clover.

Drainage—The flat lands are being tiled as fast as the farmer can get at them.

Other Industries—Very good.

Lands—Are steadily raising in price; a good farm will easily bring from $100 to $125 per acre.

Report of Fair—Held August 18, 19 and 20. The exhibits in all departments were first class, both as to quality and quantity; races were well filled and gave satisfaction to the visitors, and all proclaimed that the fair this year was the best ever held on our grounds.

LINN.

THOMAS DELANEY, FAIRFAX, SEPTEMBER 30, 1908.

General Condition of Crops and Season—Very good.

Corn—Quality of corn good but yield light.

Oats—Light; good color.

Wheat—Winter wheat good; spring wheat fair; about eighty per cent of an average crop.

Rye—Good; ninety-five per cent of an average crop.

Barley—Fair.

Flax—None grown here.

Buckwheat—Very little grown here.

Millet—Fair; about eighty per cent of an average crop on account of drought.

Sorghum—Fair; very little grown here.

Timothy—Good; ninety-five per cent of an average crop.

Clover—Good.

Prairie Hay—Very little grown here.

Other Grains and Grasses—Fair.

Potatoes—About sixty per cent of an average crop.

Vegetables—Fair.

Apples—Good.

Other Fruits—Good.

Cattle—In good condition but not many in this vicinity.

Horses—In good condition.

Swine—Healthy but not plentiful on account of high priced corn.

Sheep—Very few here and in poor condition.

Poultry—O. K.

Bees—O. K.

Drainage—Two dry to consider.

Other Industries—Very good.

Lands—In poor shape.

Report of Fair—Held September 1-4, inclusive. Our fair exceeded our expectations as we had no fair in 1907; had a very good display of stock and other exhibits and expect to do better still next year.

LINN.

E. E. Henderson, Central City, October 1, 1908.

Corn—Much better matured than the 1907 crop and also a better stand and yield. There was no killing frost until September 28th.

Oats—Very uneven crop; varying much in yield and quality, the yield averaging from twenty-two to fifty bushels per acre.

Rye—Good quality; yield averaged about twenty bushels per acre.

Barley—Good quality and yield and a much larger acreage than in 1907.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Small acreage; good quality.

Timothy—Good; large acreage threshed for seed.

Clover—Spring seeding suffered from August drought; old fields in the average condition.

Potatoes—Average acreage but very light yield, especially of late potatoes.

Apples—Large crop and of good quality.

Other Fruits—Good condition and a fair crop.

Cattle—Good condition but feeders scarce. Farmers generally milk cows and sell cream to local creameries.

Horses—Good condition but demand not quite so brisk as in 1907.

Swine—Healthy; no cholera but not so many raised as usual.

Sheep—Good condition and flocks increasing in this locality.

Poultry—Average number raised; good local markets for selling live poultry.

Bees—Good season; large amount of honey made.

Drainage—Large amount of tile being laid.

Lands—Very little being sold; prices range from $70 to $110 per acre.

Report of Fair—Held at Central City, September 8, 9, 10 and 11. Was very successful in attendance and the exhibits were large, the society paying over $200 more for premiums than in 1907. Prof. P. G. Holden, Miss Edith Charlton and others, were present in instruction work,

LOUISA.

J. R. Smith, Columbus Junction, September 28, 1908.

General Condition of Crops and Season—The season has been favorable to the growth of all crops; there has been no excessive rains nor serious droughts but crops on the river bottoms were damaged to some extent by the overflow of the Cedar and Iowa rivers in May. However, these were largely replanted and have matured a fair crop of corn.

Corn—The corn in this county is fully up to an average and at this time ninety per cent of it is secure from damage from frost.

Oats—Oats are rather light and the yield will not exceed twenty to twenty-five bushels per acre.

Wheat—While not extensively grown is excellent both in quality and quantity; both spring and winter varieties are good.

Rye—Not extensively grown but is of good quality and average yield.

Barley—Not much grown except for feed and in connection with oats.

Flax—None grown.

Buckwheat—But little grown; quality good.

Millet—Crop good; but little grown.

Sorghum—Good average crop.

Timothy—Exceptionally good and the hay nearly all secured in very fair condition.

Clover—Above the average and most of it secured without serious damage.

Prairie Hay—But little made.

Potatoes—Early potatoes are good in quality but not a large yield; late varieties are reported fair.

Vegetables—Have done exceptionally well this season.

Apples—The crop is light and wormy.

Other Fruits—Peaches were plentiful and of good quality; cherries about a half crop; berries and pears small yield; grapes fair, and plums scarce.

Cattle—Raising and feeding for beef is an extensive industry and the condition of stock and prices are highly satisfactory; no disease is reported.

Horses—The stock is large and condition entirely satisfactory.

Swine—With but few exceptions, and in the early part of the season, hogs have been healthy. The high price of corn led to some sales.

Sheep—This is not an extensive industry in this county; have heard of no disease and what flocks are kept are in good condition.

Poultry—The hen, as usual, has covered herself with glory and is now renewing her plumage; no disease; can give no estimate of value, but it is immense.

Bees—Have done better than usual.

Drainage—Is on the increase, both as to tile and open ditches.

Other Industries—Very good.

Lands—Land values are firm and gradually increasing; this is more noticeable in the best and highest priced lands than in the cheaper grades. The methods of farming show a vast improvement over former years; many farms are producing better crops than ever before.

Report of Fair—Held first four days in September; weather was good; attendance large; exhibit satisfactory and the receipts show a small margin to the good.

LYON.

J. H. HARRISON, ROCK RAPIDS, OCTOBER 14, 1908.

General Condition of Crops and Season—Crops generally good; the season has been favorable and farmers have attended to their crops at the proper time.

Corn—Best crop in the history of the county; yield will range about fifty bushels to the acre and the quality is good.

Oats—Good yield but light weight; will average about thirty-five bushels per acre.

Wheat—Very little, if any, wheat raised in the county.

Rye—But very little grown.

Barley—Crop was a good average quality; yield about thirty bushels per acre.

Flax—Light acreage; yield about twelve bushels per acre.

Buckwheat—None.

Millet—Small acreage but excellent quality and yield.

Sorghum—None.

Timothy—Good big yield; acreage increasing every year.

Clover—More clover sown each year; crop very heavy.

Prairie Hay—Small acreage.

Other Grains and Grasses—Grains and grasses did generally well.

Potatoes—Good yield and good quality; average about one hundred twenty-five to one hundred fifty bushels per acre.

Vegetables—Matured in good season and of good quality.

Apples—Crop light on account of early frost.

Other Fruits—Crops light on account of early frost.

Cattle—In fair condition; a majority of the farmers have dairy herds; feeders will be about the same as last year.

Horses—Are improving every year; farmers getting into the larger breeds, such as Percherons; price high.

Swine—Have done well; price high.

Sheep—Increasing in number every year as they seem to do well in this locality.

Poultry—Increasing every year and getting more into thoroughbred stock.

Bees—A paying industry and increasing each year.

Drainage—Natural condition very good but farmers are doing a great deal of sub-drainage as it enables them to work their entire farms.

Lands—The lands in Lyon county are second to none in the state, the soil is a deep black soil with a clay loam sub-soil. Lands are selling from $10 to $15 per acre in advance of what they were selling for eighteen months ago.

Report of Fair—Held at Rock Rapids, August 25 to 28. The weather was fine and the fair a grand success. Entries in every department was heavy and visitors went away seemingly well pleased; prospects for the future look good.

MAHASKA.

C. F. Momyer, New Sharon, September 30, 1908.

General Condition of Crops and Season—Good.

Corn—Good; never better and most all out of the way of frost.

Oats—Fair; good many light.

Wheat—Not much sown but good yield and quality.

Rye—Not much sown.

Barley—Good.

Flax—None.

Buckwheat—None.

Millet—Not much sown.

Sorghum—Good.

Timothy—Good yield and good quality.

Clover—Never better.

Prairie Hay—None.

Other Grains and Grasses—Alfalfa good.

Potatoes—About half a crop.

Vegetables—Good.

Apples—Exceptionally fine; the quality of the apple display at our fair was better than that at the state fair, although not so large.

Other Fruits—An abundance of fruit and of finest quality.

Cattle—Not so many as last year; feeders are slow sale on account of the high price of corn; stockers good sale; milch cows high.

Horses—Good demand and high prices prevail. We have a fine lot of colts.

Swine—Not very large pig crop this year; so much disease last year and some this year also.

Sheep—Not many raised but a good many being shipped in and fattened.

Poultry—Fine lot of poultry.

Bees—Did well this year.

Drainage—Quite a lot of tile being put in each year.

Other Industries—All flourishing.

Lands—High; selling from $50 to $175 per acre.

Report of Fair—Held September 15 to 18. The fair was a success in every way; we will be able to pay up in full and have a small balance on hand.

MARION.

Charles Porter, Pella, October 20, 1908.

General Condition of Crops and Season—During the early part of the season the ground was in very good shape for seeding but during planting time too much rain and cold weather prevailed. At this time, however, our crops, as a whole, average good.

Corn—Early corn was good quality but late corn somewhat chaffy.

Oats—Very spotted this year; quality fair; yield varied on account of seed more than anything else.

Wheat—Fall wheat exceptionally good, yielding as much as forty bushels per acre; spring wheat better than usual as to quality and yield.

Rye—Not much sown; average crop.

Barley—Average.

Flax—None sown.

Buckwheat—Above average.

Millet—Average.

Sōrghum—Increased output; good crop and of good quality.

Timothy—Heavy.

Clover—Both first and second cutting extra good; not a big yield of seed but of fair quality.

Prairie Hay—None.

Other Grains and Grasses—Fair.

Potatoes—Some varieties very good, others only fair.

Vegetables—Extra good.

Apples—Quality fair and an average crop.

Other Fruits—Peaches abundant; no plums to speak of; small fruits and average crop.

Cattle—Increasing in numbers; dairy cows high in price; beef breed types are increasing in good quality.

Horses—Good quality; draft horses are very high, while brood mares of draft breeds are not sold for shipment but selling price locally has been at a high figure.

Swine—Very little sickness reported for the past eight months; being marketed in large numbers; fair crop of pigs and of good quality.

Sheep—Average.

Poultry—Great interest taken in poultry raising and there is a good demand for same. The American variety is taking the lead.

Bees—Did exceedingly well in June but did not do so well later.

Drainage—Great increase in tile drainage and some open ditches are being cut in river bottoms.

Other Industries—Prosperous.

Lands—Selling very high when sales are made but not much land changing hands.

Report of Fair—Held October 5 to 6. Rained entry day but good weather the balance of week; had a very successful fair as the exhibits were good in all departments. Our improvements are more than our present debt.

MARSHALL.

H. M. WEEKS, RHODES, OCTOBER, 1908.

General Condition of Crops and Season—Crops are generally fair; season somewhat backward in the spring. Crops damaged somewhat by drought in fore part of September; hardly enough rain for fall plowing. Pasture was somewhat short in September.

Corn—About eighty per cent of an average crop.

Oats—Very good quality but not very large yield, about twenty to thirty-five bushels per acre.

Wheat—Very little sown; some very good yields of winter wheat but spring wheat was light and of good quality.

Rye—Did well where sown but very little raised.

Barley—Very light acreage but yield and quality fair.

Flax—None.

Buckwheat—None.

Millet—None in this vicinity.

Sorghum—None raised. I think this is the first year for eighteen years that we have not had samples of sorghum shown at our fair.

Timothy—Good crop and secured in good condition; very little sown for seed.

Clover—Good crop, especially fine second growth; not much sown for seed but what was sown was of good quality and yielded good.

Prairie Hay—No wild hay in this district except in sloughs.

Other Grains and Grasses—Fine crop of timothy and clover; pastures have been good, except for a short time in September.

Potatoes—Early potatoes were good while the late potatoes were of light yield but of fine quality; none rotted.

Vegetables—Good yield of all vegetables.

Apples—Fair crop of early fall varieties; winter apples light yield.

Other Fruits—Grapes good; fair crop of peaches and pears; peaches seem to be doing better in this section every year; cherries good; few plums and small fruits light.

Cattle—A leading industry here, many fine herds and many good feeders and shippers in this district; have had no disease the past year and cattle are looking fine. Much attention being given to the improvement of stock and there were eighty-four cars of cattle shipped from Rhodes since last report, October 12, 1907.

Horses—Above applies to horses. Horses have been healthy and prices good. Twenty-three cars of good horses shipped from Rhodes since last report; heavy draft horses are mostly bred.

Swine—Many good breeders in this district, some of whom have shown stock at several county fairs. The stock is free from disease, generally, and there is a good crop of spring pigs; fifty-nine cars have been shipped from Rhodes since last report.

Sheep—Not many in this district; show at fair small; seven cars shipped from Rhodes since the last report.

Poultry—A profitable industry; egg and poultry dealers at this place report shipments from Rhodes for last six months at one thousand cars of eggs and sixty thousand pounds of live poultry.

Bees—Not many kept but those who have them report a good season and a good yield of honey, which is worth from ten to fifteen cents per pound.

Drainage—Most of the low ground in Marshall county is well tiled.

Other Industries—Very good in all branches.

Lands—High in price and still advancing; sales in this vicinity have been made from $100 to $175 per acre during the past year.

Report of Fair—Held at Rhodes September 29, 30, October 1 and 2. Weather was cold and disagreeable but attendance was very good. A new feature was a stock judging contest which created much interest. Many fine herds of cattle were entered and the horse department was well filled with Percherons and Shires. The society was disappointed in not being able to wipe out a debt of $355, but in spite of the unfavorable weather will pay all bills and premiums in full and are not discouraged but expect to go into the field with good courage in 1909.

MARSHALL.

W. M. Clark, Marshalltown, October 8, 1908.

General Condition of Crops and Season—Season was backward with heavy rains up to June 1st, which retarded the growth of corn, although crops as a whole were above the average.

Corn—Usual acreage and average crop.

Oats—Very heavy.

Wheat—Winter wheat was fine and yield excellent; more wheat being raised each year; spring wheat fair, both as to quality and yield.

Rye—None raised.

Barley—Quality and yield good but little raised.

Flax—None raised.

Buckwheat—not enough raised to report on.

Millet—Very little sown but what there is is of good quality.

Sorghum—None raised for commercial purposes.

Timothy—Very heavy yield and secured in good condition.

Clover—Good, but little raised for seed.

Prairie Hay—None.

Other Grains and Grasses—Some alfalfa raised but mostly in the experimental stage; some fields promise well.

Potatoes—A fair yield and of excellent quality; heavy shipments from the northern portion of the county; a profitable crop for the farmer.

Vegetables—Abundance of all kinds.

Apples—Good, fruit is being given more attention each year with very satisfactory results.

Other Fruits—Grapes, plums, and small fruits good, peaches are being raised all over the county; over thirty exhibits at the county fair and twelve premiums awarded.

Cattle—In good condition but sold off close.

Horses—More pure bred horses are being raised each year and find a ready market at good prices.

Swine—But few old swine in the county, most of the up-to-date farmers are getting pure bred stock; over four hundred registered animals shown at county fair in September.

Sheep—But very few in the county, but the number of pure bred are increasing rapidly and are proving profitable to the farmer.

Poultry—In healthy condition and money makers.

Bees—This industry is on the increase.

Drainage—Several ditches have been constructed in the river valley and the extreme western part of the county.

Other Industries—Prosperous.

Lands—Increasing in value, but few sales.

Report of Fair—Held September 14 to 18 inclusive. A very large attendance and increase in interest. There were sixty more exhibitors this year than last, especially good exhibits in the horse, swine and poultry departments, while the ladies' department was exceptionally fine and the showing of fruits and flowers was very good. We had good races and the weather was fine during the entire fair.

MILLS.

G. W. WILLIAMS, MALVERN, OCTOBER 26, 1908.

Corn—Fair average; from twenty to sixty bushels per acre.

Oats—Very poor average; from six to twenty bushels per acre.

Wheat—Fair, from six to twenty bushels per acre.

Rye—Very little raised; average from ten to twenty bushels per acre.

Barley—Very little raised; from twenty to twenty-five bushels per acre.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Good.

Sorghum—None raised.

Timothy—Good quality; yield from one to three tons per acre.

Clover—Good quality; good yield, second crop fine.

Prairie Hay—Good; put up in fair condition.

Other Grains and Grasses—Good.

Potatoes—Fair yield; good quality.

Vegetables—Fair.

Apples—Very poor inferior quality.

Other Fruits—Fair.

Cattle—Fine condition; not many on feed.

Horses—Fine condition; good horses scarce.

Swine—Good condition; not much disease.

Sheep—Very few raised.

Poultry—Good supply; good condition and good price.

Bees—Very few raised.

Drainage—Very little tiling done.

Other Industries—Good.

Lands—In good condition; price from $70 to $140 per acre.

Report of Fair—Held at Malvern, August 4 to 7. Stock exhibit small but good; races very good; attendance good; every one pleased; receipts did not quite meet the expenditures.

MITCHELL.

W. H. GABLE, OSAGE, OCTOBER 12, 1908.

General Condition of Crops and Season—The general average of crops were good. A late backward spring retarded the growth of crops materially but a fine late fall in a measure made up for the late spring.

Corn—Acreage small; quality good, best had for many years.

Oats—Good crop.

Wheat—Practically none raised.

Rye—Good crop.

Barley—Fairly good crop.

Flax—Quality good; not much raised.

Buckwheat—Good.

Millet—Very little raised.

Sorghum—None raised.

Timothy—Crop good.

Clover—Good.

Prairie Hay—None raised.

Other Grains and Grasses—Very good crop.

Potatoes—Crop only a fair one.

Vegetables—Yield and quality good.

Apples—A very light crop.

Other Fruits—Only a fair yield of small fruits.

Cattle—In good condition; Shorthorns predominate.

Horses—The grade is generally improving; prices continue high.

Swine—Average number; no disease.

Sheep—Small flocks; good condition.

Poultry—In good condition; prices high for eggs and poultry.

Bees—In moderately good shape.

Drainage—Land is being tiled where at all necessary.

Lands—A good demand for lands in this county by eastern farmers; prices high.

Report of Fair—Fair held at Osage, September 15, 16, 17 and 18. The weather was excellent; attendance good, exhibits fine and the fair was a success.

MONONA.

A. W. Burgess, Onawa, September 25, 1908.

General Condition of Crops and Season—Good for the year; early spring fine for getting crops in; no rain in April; rained nearly every day during May and into June, which made it next to impossible to get into fields to cultivate.

Corn—Good quality and fairly good yield; acreage about the same as last year.

Oats—Fair quality and average acreage.

Wheat—Mostly winter wheat; good quality and more than the average acreage.

Rye—None.

Barley—Very little.

Flax—None.

Buckwheat—None.

Millet—Very little; hay only.

Sorghum—Very little, if any.

Timothy—Average acreage; hay only.

Clover—More being sown every year, especially of alfalfa class; good crops.

Prairie Hay—Below average yield; good quality.

Potatoes—Early potatoes good; late potatoes light on account of dry weather.

Vegetables—Average.

Apples—No apples, on account of frost.

Other Fruits—None.

Cattle—More good cattle in this county than ever before; many of the farmers getting small fancy herds.

Horses—Crop about average with last year; good stallions coming in.

Swine—Not as good as last year; not many ready for market on account of high priced feed.

Sheep—None to speak of.

Poultry—More than usual.

Bees—Average.

Drainage—This county—the western part—is being ditched most everywhere; the big canal is well under way and many small ones being dug.

Lands—Land business this summer has been quite brisk and many acres have changed hands; prices here range from $60 to $150 per acre.

Report of Fair—Held September 16, 17 and 18. Good display of everything but the attendance was not up to what it should have been.

MUSCATINE.

W. H. Shipman, West Liberty, October 27, 1908.

General Condition of Crops and Season—Good average season; not backward at any time.

Corn—Good yield and quality and acreage up to the average.

Oats—Below the average in quality and yield; too hot at the time of blooming.

Wheat—Very little raised; good quality.

Rye—None raised.

Barley—Fair crop; acreage small.

Flax—None raised.

Buckwheat—Very little raised.

Millet—None raised.

Sorghum—None raised.

Timothy—Extra good in quantity and quality; acreage above the average.

Clover—Very good in yield and saved in fine condition.

Prairie Hay—None.

Potatoes—Above an average yield and quality good.

Vegetables—Some sugar beets raised with a satisfactory yield.

Apples—Good average crop.

Other Fruits—Grapes and peaches a heavy crop; small fruits a good average.

Cattle—The number fed is below the average; the demand for milk makes the good milk cow bring a good price.

Horses—Good demand for everything that is salable; good ones scarce and hard to buy.

Swine—A little light for this time of the season on account of scarcity of old corn; no cholera.

Sheep—The grades are being thinned out and their places filled with thoroughbreds.

Poultry—Sold off close on account of high prices.

Drainage—Considerable work being done by the county; new ditches and old ones cleaned out.

Other Industries—The Iowa Condensed Milk Company makes a good market for milk; they make condensed milk, evaporated cream; plain milk for ice cream, butter, etc.

Lands—More buyers than sellers and the price going up all the while.

Report of Fair—Held August 17 to 20 and was called the best held in the forty-six years of the organization; exhibits good in all departments, especially apples, garden vegetables, and farm products. We use the single expert judge in all departments and find it very satisfactory. We put on a boys' judging contest and sent the four highest boys to the state fair contest. Had a good show in all stock classes and the races were all filled and were closely contested.

MUSCATINE.

H. WILDASIN, WILTON JUNCTION, OCTOBER 9, 1908.

General Condition of Crops and Season—About average.

Corn—Above average.

Oats—A little below average.

Wheat—Practically none raised.

Rye—Good.

Barley—Fair.

Flax—None raised.

Buckwheat—Practically none raised.

Millet—Practically none raised.

Sorghum—Good but small amount.

Timothy—Extra good.

Clover—Extra good.

Prairie Hay—None.

Potatoes—Below average.

Vegetables—Good.

Apples—Good crop.

Cattle—About as usual.

Horses—About as usual.

Swine—Not as many.

Sheep—About as usual.

Poultry—Average.

Report of Fair—Held September 15, 16, 17, 1908.

O'BRIEN.

J. B. MURPHY, SUTHERLAND, OCTOBER 13, 1908.

General Condition of Crops and Season—Season wet and backward; corn planting late; crops fair.

Corn—Average crop; dry and warm weather in September made the corn mature.

Oats—Fifty per cent of an average crop.

Wheat—Very little raised and poor quality.

Rye—None raised to speak of.

Barley—Average crop.

Flax—None raised.

Buckwheat—None.

Millet—Good crop.

Sorghum—None raised.

Timothy—Good.

Clover—Hay about the average, seed light.

Prairie Hay—Good.

Potatoes—Average crop.

Vegetables—Good.

Apples—Light crop.

Other Fruits—Cherries good; raspberries good; plums very poor, strawberries below the average.

Cattle—Average number.

Horses—Increasing.

Swine—Average number.

Sheep—Increasing.

Poultry—About the average.

Bees—Below the average.

Drainage—Fairly good; a large number of tile went into the ground this year.

Lands—$75 to $150 per acre.

Report of Fair—Held at Sutherland, September 2, 3, and 4. A success in every way.

O'BRIEN.

JOE MORTON, SHELDON, OCTOBER 6, 1908.

General Condition of Crops and Season—General condition of crops were good; fine crop of corn and grasses; oats were very light; season was backward and heavy rains in the fall made the harvest bad.

Corn—Good on high ground.

Oats—Fair, light quality and not an average crop.

Wheat—Winter wheat was good crop; on the whole wheat was a good crop.

Rye—Fair crop; very little raised in this county.

Barley—Good stand and average yield.

Flax—Fair; not much raised.

Buckwheat—Fair.

Millet—Good.

Sorghum—None.

Timothy—Good stand.

Clover—Good stand.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Good crop; heavy yield.

Vegetables—Good.

Apples—Not very good; light yield.

Other Fruits—Fair.

Cattle—Did well owing to good pasture during the fore part of the season.

Horses—Horses are handled by farmers and the disposition seems to be to improve.

Swine—Hogs are light, owing to loss of young and high price of corn.

Sheep—Good.

Poultry—Good.

Bees—Good.

Drainage—Farmers are draining their lands; many miles of tiling has been put in the past year.

Other Industries—Prosperous.

Lands—Values on land seem to advance and they are in a good state of cultivation.

Report of Fair—August 18, 19, 20 and 21. Receipts were light, owing to bad weather and the fact that farmers were too busy to leave their harvest and work. Receipts at the gate were over $300 less than last year and we had larger expenses in the way of attractions, etc.

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J. C. Beckner, Clarinda, October, 1908.

General Condition of Crops and Season—Spring was extra fine and crops were put in in good condition but about the middle of May rain caused delay in attending to the corn and made it too wet for oats and wheat. Grass, hay and pasture was fine and stock did well on same.

Corn—Corn on old ground and bottom land is very spotted. Some very fine corn on sod, I think about eighty bushels per acre and of very good quality.

Oats—Very badly rusted, about ten to thirty bushels per acre and only about twenty to twenty-five pounds per bushel measure.

Wheat—Considerable was too heavy and lodged and was wet and hard to cut; only a few pieces making thirty to thirty-five bushels per acre.

Rye—Very little sown.

Barley—Very little sown, except mixed with early oats; fair crop.

Flax—None raised that I know of.

Buckwheat—Very little sown.

Millet—Extra good and more sown than usual on account of the land being to wet for corn in many places.

Sorghum—Very little raised in the county; what was planted was good.

Timothy—Quality of hay and seed both extra good.

Clover—Early clover hay was very heavy but was too wet to cure very good; second crop and seed extra good.

Prairie Hay—Very little but what we have is extra heavy, somewhat mixed with weeds.

. . Other Grains and Grasses—Very little but what we have is extra

Other Grains and Grasses—Some very good speltz grown this year; the blue grass was good all season.

Potatoes—Early potatoes were fair but was too dry for late ones.

Vegetables—Hardly an average crop on account of the cold and wet in May and June.

Apples—Some extra fine apples but the frost killed the bloom in streaks.

Other Fruits—Peaches fine quality; strawberries, raspberries and blackberries light crop; grapes were a fair crop but of extra fine quality.

Cattle—There are several small herds of Shorthorns and Polled Angus in this county; a few fine Herefords and Red Polls and a fair grade of common cattle, which are in fine condition.

Horses—Extra fine lot of pure breds and grades, both draft horses and roadsters. Also have a fine showing of Shetland ponies.

Swine—The swine showing at the fair was of a quality that would have looked well at the state fair; large and of good quality.

Sheep—Though they are doing fine there are but very few sheep compared with other stock.

Poultry—No county can boast of better poultry than we. It was too wet this season for young chickens, consequently the crop is light.

Bees—Very little interest taken in bees in general, although we have an apiary that ships queen bees to almost every clime.

Drainage—An increase in the amount of tile each year, we need more.

Other Industries—Very prosperous.

Lands—Very good; I am told that one man has eighteen acres of early potatoes that will make two hundred fifty bushels per acre and on the same ground raised a crop of millet seed that will make fifty to sixty bushels of seed per acre.

Report of Fair—Held September 14 to 18, 1908. The show of cattle, horses, hogs and sheep was extra good for a county fair; the show of fruits was also fine; corn fine; oats poor, while wheat, rye and barley was just fair. Fine showing of timothy and clover seed. Not much poultry shown but what was shown was fine. Taking the exhibits altogether we had a very good showing in each department. The county superintendent had charge of the displays.

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A. W. GOLDBERG, SHENANDOAH, OCTOBER 16, 1908.

General Condition of Crops and Season—Season about two or three weeks late and general condition below average.

Corn—About two-thirds of a crop.

Oats—About one-third of a crop.

Wheat—Two-thirds of a crop.

Rye—None to speak of.

Barley—None.

Flax—None.

Buckwheat—None.

Millet—Very little.

Sorghum—None.

Timothy—Good.

Clover—Good.

Prairie Hay—None.

Other Grains and Grasses—Nothing to amount to anything.

Potatoes—Fair crop.

Vegetables—Fair crop.

Apples—Spotted.

Other Fruits—Two-thirds crop of strawberries; few blackberries; few raspberries; peaches spotted, generally more or less hurt by unfavorable early season.

Cattle—About one-half as many on feed as usual.

Horses—About normal condition; good prices.

Swine—Not as many as usual by half.

Sheep—But few sheep around here.

Poultry—Normal condition.

Bees—None to speak of.

Drainage—Good.

Lands—Selling high and hard to get.

Report of Fair—Good fair; every obligation paid; good crowd, considering unfavorable weather for a couple of days.
Every one was pleased with our program.

POCAHONTAS.

General Condition of Crops and Season—Condition of crops fair with a very wet season.

Corn—Will average about thirty-five bushels per acre and is of good quality.

Oats—Poor yields and poor quality.

Wheat—Very little raised here.

Barley—Not much raised but what has been marketed show good quality for this county.

Flax—A good crop and quality.

Buckwheat—Fair.

Millet—Good.

Sorghum—None raised here.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Not very good yield but good quality.

Vegetables—Good.

Apples—Very small crop.

Other Fruits—Fair.

Cattle—Good.

Horses—Good.

Swine—Fair.

Sheep—Very few raised.

Poultry—Fair.

Bees—None.

Drainage—A large amount has been done this year; both in tile and dredge ditches.

Other Industries—Quite a few new industries have been started.

Lands—Average price of land about same as last year.

Report of Fair—Held on the 4, 5, 6 and 7 of August. Weather was ideal during entire week and the attendance the largest had for several years.

POTTAWATTAMIE.

CALEB SMITH, AVOCA, OCTOBER, 1908.

General Condition of Crops and Season—Crops above the average, excepting oats which were light and of poor quality; late frost in the spring destroyed most of the fruits. Had plenty of rainfall until late in the season when it was rather dry for pastures.

Corn—An average crop; late planting may be light and chaffy on account of dry weather late in the season.

Oats—Poor quality and a very light crop; prices good.

Wheat—Above the average and good quality.

Rye—Very little raised.

Barley—Yield above the average and of good quality.

Flax—No flax raised in this vicinity.

Buckwheat—None raised.

Millet—Very little sown.

Sorghum—None raised.

Timothy—Large yield; good quality and fair prices.

Clover—Good crop of hay and good prospects for seed.

Prairie Hay—Average yield; quality good but very little raised.

Potatoes—Of good quality and of average yield.

Vegetables—Plenty and of good quality.

Apples—Very few raised on account of late frosts.

Cattle—In good condition and plenty of feed until latter part of September when dry weather caused the pastures to become short.

Horses—In good condition; more attention paid to the raising of good horses than formerly.

Swine—A good many are raised in this locality and quite a number of pure bred herds. Very little cholera reported.

Sheep—Very few handled in this section of the country.

Poultry—Demand a good price; quite a number of fine breeding pens were exhibited at our fair.

Bees—Good crop of honey.

Lands—Are increasing in value and rents are advancing.

Report of Fair—Held at Avoca, September 8 to 11. Weather good; attendance good and as a whole was a success. For the first time in the history of the association it is now out of debt and six and a half acres of additional ground was purchased also.

POWESHIEK.

JAMES NOWAK, MALCOM, OCTOBER 30, 1908.

General Condition of Crops and Season—Weather conditions too wet in spring; quite warm in summer and very hot and dry in September.

Corn—A very good crop and ninety per cent of it of good sound quality; average yield is about thirty-seven and one-fourth bushels per acre; price high.

Oats—A fair yield; average about twenty-seven and one-fourth bushels per acre; price good.

Wheat—Not much raised but a good yield; good quality and good price. Average about eighteen bushels per acre.

Rye—Not much raised but is of fair quality; about twenty bushels per acre and the price is fair.

Barley—Good fair crop; quality good; price good and about an average of thirty bushels per acre.

Flax—None raised here.

Buckwheat—Very little raised.

Millet—Very little raised.

Sorghum—Not much grown; but a good yield.

Timothy—A good hay crop this year.

Clover—Good crop.

Prairie Hay—None grown; land all under cultivation.

Other Grains and Grasses—Pastures were good all the year up to September when they suffered from drought.

Potatoes—A smaller yield than usual; good price.

Vegetables—All garden truck was good.

Apples—A fair crop of fall and winter apples.

Other Fruits—Most fruit suffered from a frost late in the spring; not as large a crop as usual.

Cattle—Doing well and an average number raised; price good.

Horses—In good demand and good prices except that there was a slump of about fifty dollars per head on account of the panic of 1907, but a good part of that has been recovered.

Swine—Good prices have prevailed except for about three months last winter, caused by the panic of 1907.

Sheep—Not many raised; price of wool now low.

Poultry—Good prices and in good demand.

Bees—Lots of honey this year.

Drainage—More attention given to drainage every year.

Lands—Lands are advancing in price steadily; prices are from $90 to $150 per acre. $110 is about the average for a good improved farm.

Report of Fair—Held August 18 to 20 and was a successful fair in every way. Exhibits were good in nearly all departments; attendance good and the weather was ideal. There was no gambling of any nature permitted.

POWESHIEK.

I. S. BAILEY, GRINNELL, SEPTEMBER 17, 1908.

General Condition of Crops and Season—Crops fair; large amount of rain in fore part of season but dry in the last part of August and up to the present writing.

Corn—Good; mostly out of the way of frost.

Oats—Fair; early sown berry quite plump and yield fair; late sown rusted badly and yield very light.

Wheat—Good, both spring and winter.

Rye—Good.

Barley—Good.

Flax—None raised.

Buckwheat—None raised.

Millet—Good.

Sorghum—Good.

Timothy—Extra good and of excellent quality.

Clover—Extra good; best crop we have had for years.

Prairie Hay—Good, only small amount to be cut.

Other Grains and Grasses—All good.

Potatoes—Fair; early varieties light yield, late better.

Vegetables—Good.

Apples—Fair.

Other Fruits—Fair.

Cattle—Good condition; pastures have been the best in years.

Horses—Good condition; price off about twenty per cent from 1906.

Swine—Very poor on account of no corn during season; many have been raised on grass; some hog cholera reported among the pigs, which were a light crop on account of the low price during winters of 1906 and 1907. Many farmers sold their brood sows to packing houses.

Sheep—Good condition; not so many as in 1907 by about twenty per cent.

Poultry—Good.

Bees—Good; season has been good for bees on account of so much white clover.

Drainage—Good; more tile being laid every season and with good results.

Other Industries—Good shape.

Lands—Will sell about $10 per acre higher than in 1907.

Report of Fair—Held September 1, 2, 3, 1908. Weather was fine and attendance largest known during the history of the society. There were good exhibits in all departments and the premiums were paid in full.

RINGGOLD.

A. E. LANE, TINGLEY, SEPTEMBER 21, 1908.

General Condition of Crops and Season—Good.

Corn—Yield heavy and good.

Oats—Yield light but of good quality.

Wheat—Yield large and quality good.

Rye—Yield good and quality good.

Barley—Small crop.

Flax—No flax raised.

Buckwheat—Crop good; not threshed yet.

Millet—Crop good; not threshed yet.

Sorghum—Quality and yield good.

Timothy—One of the best yields we have had.

Clover—Best clover crop we have had in years.

Prairie Hay—None.

Other Grains and Grasses—Good.

Potatoes—Yield good and large; quality good.

Vegetables—Could not be beaten.

Apples—Small crop.

Other Fruits—Small crop.

Cattle—We have some of the best cattle in the state; our exhibits good.

Horses—Our exhibit was excellent; it would be difficult to beat the showing any place; quality and breed of the best.

Swine—We raise the best hogs that are raised in the state.

Sheep—Our sheep are fine and exhibits large. Are good mutton sheep and the wool is heavy.

Poultry—Excellent exhibits and the breeds all standard.

Bees—Large number of hives in this county.

Drainage—Good.

Other Industries—Good.

Lands—Good; prices range from $65 to $100 per acre.

Report of Fair—First annual fair held September 23 and 24, 1908. It was a decided success from an exhibit standpoint as the showing in all departments was fine.

SAC.

S. L. Watt, Sac City, October, 1908.

General Condition of Crops and Season—Not up to standard but better than last year; first part of season was wet and the last part dry; small grains light but corn quite good.

Corn—Acreage a little short on account of the wet; quality good but ears not filled clear out to ends. The yield was more than last year and out of the way of frosts.

Oats—Better than last year; early oats the best but the yield is light in weight.

Wheat—Considerable wheat grown here; winter wheat good; spring not very good.

Rye—Fair but not much raised.

Barley—Good and considerable raised.

Flax—Good but not very much raised.

Buckwheat—Good but not very much raised.

Millet—Good and lots raised.

Sorghum—Fair but not very sweet; considerable raised.

Timothy—Good and lots of it.

Clover—Good but not seeding very well from the second crop; used mostly for feeding.

Prairie Hay—Good but not much left here.

Other Grains and Grasses—Good and a large yield.

Potatoes—Lots raised and of good quality.

Vegetables—All good this year.

Apples—Not very many and crop not very good.

Other Fruits—Light yield.

Cattle—In good condition but some pink-eye scattered through the county.

Horses—In good condition and lots of young horses and mules raised here.

Swine—Number of spring pigs below general average and lots dying from worms and general hog disease.

Sheep—Good, and lots raised; mostly Shropshire.

Poultry—Lots of poultry but some dying with general disease; good prices.

Bees—Extra good; lots of honey, made mostly from white clover.

Drainage—Good, and lots of tiling done.

Other Industries—Good corn canning factory; stone factory doing a good business; lightning rod factory carrying on a big business and the brick factory is considered one of the best equipped in the state. Tobacco was good this year; about twenty acres grown with a yield of thirty-five to forty thousand pounds.

Lands—Advancing in price and $20 higher than last year with lots of buyers.

Report of Fair—Held August 11, 12, 13, 14, 1908. First day wet but fair attendance; second day, good attendance, about 1800; third day, large attendance, seventy-five hundred admissions, weather good; fourth day, held over, and fifth day declared off after asking horsemen to vote on what they wished to do. The fair was a grand success and every one seemed well pleased; the prospects are for a larger fair in 1909. Racing was especially fine as the horses were of the best; more cattle shown than any other class, while the swine and horses followed next in order. Good deal of improvement has been done and there is still about $400 left in the treasury.

SCOTT.

MILES COLLINS, DAVENPORT, MAY, 1909.

General Condition of Crops and Season—Wet spring and dry summer. Everybody prosperous and happy.

Corn—About average yield; mostly yellow dent corn. Also a good yield of sweet corn for local markets.

Oats—More acreage than usual but a light crop.

Wheat—Good.

Rye—Very little.

Barley—Quite extensively raised and very good crop.

Buckwheat—Very little raised.

Millet—Heavy crop but hard to cure for feed because of thick stalks and heads which retained moisture.

Timothy—Exceptionally heavy crop, averaging over two tons per acre; most of it was put in the mow without getting wet.

Clover—Clover was cut twice and both crops were good.

Potatoes—Fine yield where free from potato bugs. Some extra early potatoes sold at $2.00 per bushel but the average price was 60 cents to 70 cents.

Vegetables—Fair crop.

Apples—Fair crop of summer apples, such as Wealthy, Snow and Duchess.

Other Fruits—Peaches and grapes in abundance. Fair berry crop; few pears and no plums.

Cattle—About the same number as usual.

Horses—Great demand for horses of any description.

Swine—Not so many raised. Farmers pushed the sale of their hogs at a very light weight on account of the high price of corn and fear of cholera.

Sheep—Not many in Scott county but they do well here.

Poultry—Growing industry. Good poultry exhibition was held at Davenport in November. Price of eggs high.

Bees—Lots of honey.

Drainage—Great deal of tiling; also making gravel roads.

Other Industries—Sweet corn canning factory; cucumber pickling works, and also glucose works.

Lands—Steady price.

Report of Fair—Farmers' Institute largely attended.

SHELBY.

Fred Frazier, Harlan, September 1-4, 1908.

General Condition of Crops and Season—An average crop; the early spring was favorable for seeding and planting but later on it became wet and cold and some damage was done to corn and oats.

Corn—Little more than an average acreage and it is estimated that it will be an average yield of good quality.

Oats—About one-fourth of a crop and quality poor.

Wheat—About the usual acreage and yield and quality good.

Rye—Not much sown, except for hog pasture.

Barley—About the usual acreage and the yield and quality good.

Flax—Not much sown.

Buckwheat—Not much sown.

Millet—Small acreage; quality good.

Sorghum—Not much raised.

Timothy—Average yield; quality good.

Clover—The hay crop was good; there was also an excellent crop of fall clover but little of it was cut for seed.

Prairie Hay—Very little cut.

Potatoes—Small acreage; quality good.

Vegetables—An average crop.

Apples—Yield very light; quality good.

Other Fruits—Light crop.

Cattle—Not as many steers on feed as usual; stock cattle in good condition, while some very fine herds of pure bred cattle are owned by our farmers.

Horses—High prices for horses has stimulated the breeders to raise more colts then in former years but prices are fifteen to twenty-five dollars a head cheaper than a year ago. All breeds are represented.

Swine—The number of spring pigs below the average, not much disease among hogs in this county.

Sheep—Very few in county.

Poultry—Extra good.

Bees—Not many in the county.

Drainage—Good.

Other Industries—Gas engine factory; canning factory and brick plant located at the county seat and furnish employment for about eighty men.

Lands—Advancing in price; market value fully ten dollars per acre more than last year.

Report of Fair—Held at Harlan, September 1-4, inclusive. Attendance large; all the exhibits were good with the exception of the cattle, which was not quite up to the average; the racing was good also the other attractions. As a whole the fair was a success.

SIOUX.

H. Slikkerveer, Orange City, October 22, 1908.

General Condition of Crops and Season—Spring was cold and wet but crops are good; corn is very good; wheat fair and oats poor.

Corn—Very good, will average from forty to fifty bushels per acre.

Oats—Poor; early oats good but late oats very poor; will average from fifteen to thirty-five bushels per acre.

Wheat—Fair, will average from fourteen to twenty bushels per acre. Fall wheat will average from twenty-five to thirty bushels per acre.

Rye—None raised here.

Barley—Fair, will average from thirty to thirty-five bushels per acre.

Flax—None raised here.

Buckwheat—None raised here.

Millet—Average crop.

Sorghum—Not much raised; average crop.

Timothy—Crop above the average.

Clover—Good crop.

Prairie Hay—Above the average.

Other Grains and Grasses—Good; above the average.

Potatoes—Good crop; above the average and the quality very good.

Vegetables—Very good.

Apples—Good quality; seventy-five per cent of a crop.

Other Fruits—Average crop.

Cattle—In good condition.

Horses—In good condition.

Swine—Average number of pigs and very little disease.

Sheep—Good condition.

Poultry—Very good; no disease.

Bees—Have not done very well; very little honey.

Drainage—Good in this county but some lands could be improved by additional drainage.

Other Industries—Dairy farming and gardening have been very profitable this year.

Lands—Good demand for lands and sells readily at from $85 to $125 per acre, according to improvements on some.

Report of Fair—Held at Orange City, September 16, 17 and 18. The weather was very good; attendance large and the exhibit of horses and cattle was better than they have been for a number of years. Sheep and swine were about the same as last year while the poultry exhibit was poor. The agricultural products and the art display were very pleasing, and the racing and other attractions were excellent this year. As usual the premiums were all paid in full.

STORY.

J. R. LARSON, NEVADA, OCTOBER 3, 1908.

General Condition of Crops and Season—Crops are very good; the spring was somewhat backward but the corn was nearly all planted by June 1st; after which date seasonable rains fell and a dry, warm September allowed all of the corn to mature.

Corn—Some corn drowned out in the early part of the season, but after that the season was very favorable and corn matured before frost.

Oats—Not so good as last year; yield about twenty to forty bushels per acre; average about thirty bushels. The early oats were good but the late ones only fair.

Wheat—Very little raised here but such as was raised was better in quality and yield than usual.

Rye—Not much sown.

Barley—Practically none sown.

Flax—Practically none sown.

Buckwheat—Very little sown but quality good.

Millet—Sown to considerable extent where the corn was drowned out and was a good crop but not so heavy as some years.

Sorghum—Not much planted; have seen but two patches in the county.

Timothy—The crop of hay this year was good but what was sown this year did not make a very good stand.

Clover—An increasing amount of this is sown every year; what was sown last year made splendid hay but this year's sowing did not do well.

Prairie Hay—Hardly any left and what there is is of poor quality.

Other Grains and Grasses—There are some few farmers raising alfalfa with varying success; not enough raised to be able to report whether it is profitable or not.

Potatoes—Practically no potatoes raised; not enough for home consumption.

Vegetables—There are a couple of very fine market gardens in the county and also some watermelon farms.

Apples—Very few raised.

Other Fruits—Not a great deal of fruit raised; some small fruit.

Cattle—This industry very prosperous; many breeders of fine stock, principally Shorthorns, Herefords and Aberdeen-Angus.

Horses—Very prosperous; many breeders of pure bred horses, principally Percherons, but a good many Clydes, Coach and Hackneys, also Shetland ponies have been increasing during the last few years. Many horses are sent from here to the east and south.

Swine—Many breeders of fine stock; so far there has practically been no disease among the swine this year.

Sheep—Not a very extensive industry but one that is growing rapidly. The sheep exhibit at the fair this year was the best on record.

Poultry—Very extensive industry; all farmers raise a good deal of poultry and there are many breeders of fancy stock.

Bees—Not much interest shown in bee culture here.

Drainage—Much money is being spent on county ditches and the county is being pretty well drained.

Other Industries—There are several tile factories and canning factories in successful operation and also several creameries.

Lands—Are becoming very valuable; farms have changed hands here this fall at from $100 to $125 per acre.

Report of Fair—Held September 22 to 25. Attendance and exhibits fair. There were no races except a few pony races.

TAMA.

A. G. Smith, Toledo, October, 1908.

Corn—Planting delayed on account of a cold, backward spring and September was dry with some frosts. Late corn dried up. A sounder and better crop than in 1907; the yield is about forty bushels per acre.

Oats—Also averaged a better yield and better quality than 1907, the yield being from ten to forty-five bushels per acre; average about twenty.

Wheat—Acreage small but increasing slightly. The quality was generally good; some pieces of winter wheat yielded forty bushels per acre.

Rye—Very little raised.

Barley—Was the best of the grain crops this season; quality was good and the yield about twenty-five to twenty-eight bushels per acre.

Flax—Has ceased to be an item with us.

Buckwheat—Very little.

Millet—Very few fields, although what there is is of excellent yield.

Sorghum—Pretty nearly extinct; season favorable on account of late frosts.

Timothy—Larger yield and more cut for seed than for years; sales made from field at from four to six dollars per ton; the seed yield was good.

Clover—Conditions about the same as timothy; seed yield about two and one-half bushels per acre.

Prairie Hay—Little left to cut in the county but has been of good yield and sold at from five to seven dollars per ton from the field. The price is eight dollars now since it has been mowed and stacked.

Other Grains and Grasses—Only staples above named raised to any extent.

Potatoes—Both early and late was a smaller yield than usual; tubers large but few in hill.

Vegetables—Good yield and quality.

Apples—Good average yield and quality; though more than average damage by worms.

Other Fruits—Peaches are becoming quite plentiful and there is a good yield, notwithstanding the late frost in the spring. Plums were almost a failure on account of the frost; cherries fair and all small fruits generally fair yield.

Cattle—Had abundant pasturage until the September drought. Not as many cattle fed as usual on account of the high price of corn.

Horses—Good season and in good condition also. The county is kept pretty closely drained for the Chicago market as the prices range from one to three hundred dollars; average of about one hundred seventy-five dollars.

Swine—On account of the high price of corn last year the crop was sold off close and those kept put on grass largely. The brood sows will be mostly of this season's growth and usually good.

Sheep—Slightly increasing in extent and quality.

Poultry—Fair season for the young; no general epidemic. Eggs have been a good price and poultry raising is a steadily growing industry.

Bees—Wintered fairly well and have done well in swarming and in the output of honey.

Drainage—Receiving much attention and proving profitable.

Other Industries—Brick and tile main ones, although there is a paper mill at Tama and a mustard factory at Gladbrook.

Lands—Continually increasing in price and sales have been made more largely to local buyers than to immigrants.

Report of Fair—Held September 22 to 25, 1908. Attendance was disappointing on account of the drought the last week in September, although we had a good attendance on the last day. The exhibit of horses was not as good as usual although those brought in were of good quality; herds of Herefords, Shorthorns and Jersey cattle of good quality were exhibited. In the swine department the Poland Chinas predominated, although the Jersey Reds were a close second and a very creditable showing was also made of Chester Whites. Not a large exhibit of sheep but of good quality; medium wool predominated. A very good showing of agricultural products and fruits was made and the art department made an unusually good showing. The racing, acrobatic acts, band, etc., were all good and as a whole the fair was above the average.

TAYLOR.

F. N. LEWIS, BEDFORD, SEPTEMBER 2, 1908.

General Condition of Crops and Season—Fair to good.
Corn—Fair to good; average crop.
Oats—Rather poor.
Wheat—Average crop.
Rye—Not much grown.
Barley—Average crop.
Flax—No flax.
Buckwheat—Good.
Millet—Good.
Sorghum—Not much raised.
Timothy—Good.
Clover—Good.
Prairie Hay—Good.
Other Grains and Grasses—Average crop for this locailty.
Potatoes—An average crop.
Vegetables—Good.
Apples—Poor crop.
Other Fruits—Very poor.
Cattle—Good.
Horses—Good.
Swine—Good.
Sheep—Good.
Poultry—Good.
Bees—Very good.
Drainage—Some tiling being done.
Other Industries—Average.
Lands—Advancing some.
Report of Fair—About an average year.

UNION.

J. M. McCORNACK, CRESTON, SEPTEMBER 21, 1908.

General Condition of Crops and Season—Continued wet weather early in the season not favorable to crops with the exception of timothy and clover; all crops will average a little short with the exception of hay.

Corn—Will not be quite up to an average crop although there is a slightly increased acreage in corn this season and the quality will be good.

Oats—Rather a light yield; quality excellent.

Wheat—Small acreage of wheat sown in this county but an increase over last year and the yield is good.

Rye—Fair yield on acreage sown, which is small.

Barley—Practically none raised in this county.

Flax—None raised.

Buckwheat—Acreage light but a good yield where sown.

Millet—Small patches that were sown were very good.

Sorghum—Good yield but little grown.

Timothy—More than an average crop and the quality is excellent.

Clover—An excellent crop of clover this season; fall crop of clover very fine.

Prairie Hay—Practically none in this county.

Other Grains and Grasses—Some attention being shown to alfalfa in a small way.

Potatoes—A good yield and the quality is good.

Vegetables—A large amount of vegetables grown in this county; crop unusually large this year.

Apples—Apple crop not large; quality fair.

Other Fruits—A large amount of small fruits of all kinds.

Cattle—The number of cattle in the county fully up to the average and all are in excellent condition as the summer feed has been good. Much attention is being paid to the breeding of high grade cattle.

Horses—There is an increase of horses in number over last year. Union county produces as good draft horses as can be found in any county in the state. Much attention is being paid to the breeding of horses.

Swine—Considerable attention is being paid to breeding of hogs. The number of swine in the county is greater than a year ago.

Sheep—Small number of sheep are raised in Union county; large numbers are shipped in for feeding purposes.

Poultry—Much attention is being paid to the raising of poultry with excellent results. Greater returns are being received considering the amount of capital invested than from nearly any other source.

Bees—But little attention being paid to the bee industry.

Drainage—A large amount of tiling has been put in this season and with good results.

Other Industries—A continued increase is being made in the dairy business.

Lands—Fair demand for Union county lands during the past year with a slight increase in price.

Report of Fair—Held at Creston, August 18 to 21, 1908. Attendance very light; good display of live stock, especially in the swine department and the racing was excellent.

VAN BUREN.

D. A. Miller, Milton, October 8, 1908.

General Condition of Crops and Season—Crops fair; season late.

Corn—Fair.

Oats—Poor.

Wheat—Good.

Rye—Good.

Barley—None.

Flax—None.

Buckwheat—Fair.

Millet—Fair.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Poor.

Vegetables—Good.

Apples—Poor.

Other Fruits—Fair.

Cattle—Big lot on feed.

Horses—Plentiful and good price.

Swine—Good price.

Sheep—Wool good price.

Poultry—Big business.

Bees—Business good.

Drainage—Good.

Other Industries—Good.

Lands—Good price.

Report of Fair—Held September 15, 16, 17 and 18, 1908. Excellent fair.

WARREN.

JOE MCCOY, INDIANOLA, SEPTEMBER 29, 1908.

General Condition of Crops and Season—Season was very wet in the spring but turned off good in time to make a good crop, except on river bottom lands.

Corn—Good crop and quite well matured.

Oats—Good where drilled in.

Wheat—Both fall and winter wheat better than average.

Rye—Just fair.

Barley—Good.

Flax—None grown.

Buckwheat—None grown.

Millet—Not very much raised.

Sorghum—Not much grown.

Timothy—Good.

Clover—Good seed crop.

Prairie Hay—Not much grown.

Other Grains and Grasses—Good.

Potatoes—About an average crop.

Vegetables—Extra good crop.

Apples—About an average yield.

Other Fruits—Good yield and good quality.

Cattle—All look good; plenty of grass.

Horses—Plenty of good draft horses and selling at a good price. We now have the herd of seventy head of trotting bred horses. The great Allerton 2:09¼ is at the head of this herd of fast horses.

Swine—Usual number in the county and no disease.

Sheep—This industry is increasing.

Poultry—Large numbers.

Bees—Not many.

Drainage—Increasing.

Lands—Selling from $60 to $150 per acre.

Report of Fair—Extra good attendance and all departments were well filled.

WINNEBAGO.

J. A. PETERS, FOREST CITY, OCTOBER 21, 1908.

General Condition of Crops and Season—Crops about an average; season about normal temperature and precipitation.

Corn—Much of the corn was drowned out on the low lands, thus cutting the acreage quite a considerable. The latter part of the season was exceptionally fine for this crop and ninety per cent of it was safe from frost before it occurred. This crop will probably yield about fifty bushels per acre.

Oats—A very light oat crop; not more than twenty-five bushels per acre. About the usual amount was sown.

Wheat—Very little wheat raised in this county but what was raised was of very good quality and the average was about twenty bushels per acre. No winter wheat.

Rye—Very little raised; quality fair.

Barley—Averaged about thirty bushels per acre and was of exceptionally fine quality.

Flax—None raised.

Buckwheat—Very little raised but quality very good.

Millet—Quality and yield very good gut not much grown.

Sorghum—Only a small amount grown.

Timothy—The seed crop was excellent both as to yield and quality.

Clover—None grown for seed; the hay crop was very large and put up in exceptionally fine condition.

Prairie Hay—Averaged about one and a half tons per acre and mostly put into the mow and stack without a drop of rain on it.

Other Grains and Grasses—This is one of the great bluegrass spots of Iowa, it making a rank growth and affords feed usually about ten days earlier in the spring and about thirty days later in the fall than usual, and it is not an uncommon thing to see good pastures on the first of November.

Potatoes—Rural New Yorkers and Early Ohios are the principal potatoes raised; the yield was very good, probably two hundred bushels per acre but the acreage was not as large as usual.

Vegetables—Very good growth and a fine exhibit was made at our fair.

Apples—Poor crop; not enough to supply the local market, except in the earlier varieties. There are many orchards in this locality and many more are being started.

Other Fruits—Were only a fair crop.

Cattle—Have done well as the pastures have been very good except during the month of September, which was a little dry; no disease among the cattle.

Horses—The number of colts was possibly a little above the average and although the automobile is with us our horsemen are raising lots of horses and are finding a ready sale for them at good prices.

Swine—No disease, excepting in a few cases. Hogs have been fed on grass largely this summer on account of shortage of corn. The pig crop was not up to the average.

Sheep—There is more interest taken in sheep than in the past and there are now some very fine flocks, though small in numbers.

Poultry—Continues to grow and every farmer is now taking an interest in the hen. The shipments from this locality is very much on the increase and prices have been exceptionally good.

Bees—Only a few apiaries but the quality of honey is pronounced to be excellent.

Drainage—Cement tile are now being used extensively; much tiling is being done as thé farmers realize its value.

Other Industries—Sugar beets are being raised this year for the first time; they are yielding well.

Lands—Values are lower in this county than any other in the state and the quality of our soil can not be excelled. Good farms are being sold at $50 to $60 per acre. There are many bargains in farms here and anyone interested in investing in an Iowa farm can do no better than invest in this county.

Report of Fair—Held September 8, 9 and 10, 1908, and was one of the best, in point of quality of exhibits, that we have ever held. On account of the busy season the attendance was not as large as the management hoped for but each department was well filled with exhibits and all patrons were well pleased with the show.

WINNEBAGO.

J. P. Boyd, Buffalo Center, October 19, 1908.

General Condition of Crops and Season—Crops in general have been fairly good and the season a very peculiar one; cold and wet in the spring, giving a backset to crops and making corn planting exceptionally late but ending with a late dry fall that was the making of the corn crop.

Corn—Will yield about seventy per cent of an average crop, about seventy-five per cent of which was well matured at time of killing frost.

Oats—Were about fifty per cent of an average crop; a good stand but affected by the excessive hot weather during the ripening period, making the quality light and weighing about twenty-five pounds to the bushel.

Wheat—Small acreage; yielded from fifteen to twenty bushels per acre and quality good.

Rye—None raised here.

Barley—Very little barley raised here; yield about twenty bushels per acre and quality good.

Flax—Very little raised here; quality fair; yield from five to seven bushels per acre.

Buckwheat—Very little grown.

Millet—Good crop.

Sorghum—Very heavy growth and a good crop.

Timothy—Hay was good crop; yield from ton and a half to two tons per acre.

Clover—Good crop and considerable of second growth cut for seed this fall.

Prairie Hay—Good crop and put up in good condition.

Potatoes—Good quality and average yield.

Vegetables—All varieties yielded an abundant crop and were of good quality.

Apples—Very small crop but quality fair.

Other Fruits—About the average.

Cattle—Usual number raised and doing well.

Horses—In good condition and the usual number raised.

Swine—Great many raised but a great many lost during the last two months by disease and many still dying at this time.

Sheep—Only a few raised here.

Poultry—Large numbers raised here and doing well.

Bees—Honey crop about the average.

Drainage—A great deal of drainage being done with tile and open ditches. Several county ditches are being put in.

Lands—Prices from $45 to $60 per acre and very little changing hands.

Report of Fair—Held at Buffalo Center, September 15, 16 and 17, 1908. Exhibits large; attendance very good and the society will about pay expenses.

WINNESHIEK.

L. L. CADWELL, DECORAH, SEPTEMBER, 1908.

General Condition of Crops and Season—Six townhsips visited by severe hailstorm the 20th of June and in those townships there is but about forty per cent of an average crop; all crops, with the exception of oats and potatoes are good in the other portions of the county.

Corn—Good, best we have had for five years; fine quality.

Oats—About sixty per cent of an average crop; light weight.

Wheat—Very little raised; quality good.

Rye—Very little grown.

Barley—Fair crop and fine quality.

Flax—Good crop.

Buckwheat—Good but not much grown.

Millet—Small amount raised; quality good.

Sorghum—None raised.

Timothy—Good crop and fine quality.

Clover—Badly winter killed.

Prairie Hay—None.

Other Grains and Grasses—Fair.

Potatoes—Poor; small, few in hills.

Vegetables—Good yield and fine quality.

Apples—Poor crop both of summer and winter varieties.

Other Fruits—Poor.

Cattle—Fine condition; good prices.

Horses—Are in good demand and farmers raising a great many colts.

Swine—A big increase in swine and are free from disease.

Sheep—Flocks increasing and doing well; prices high.

Poultry—All grades raised extensively; this is one of the banner counties for poultry.

Bees—Only a few kept but they have done well this season.

Drainage—Lots of natural drainage.

Other Industries—Prosperous; no failures.

Lands—Prices range from $50 to $85 per acre.

Report of Fair—Held in Decorah, September 8 to 11, 1908. Attendance good; weather fine, no rain; all expenses paid in full, including premiums and a surplus left. The association is entirely free from debt.

WOODBURY.

JOHN R. SHAFFER, SIOUX CITY, IOWA, OCTOBER 30, 1908.

General Condition of Crops and Season—The rainfall during the season was more than ample for the growing crops as shown in precipitation by months: April, 2.45; May, 4.21; June, 3.91; July, 3.40; August, 2.96. More than the average since the year 1903. From early morn of August 31st until nearly midnight of September 25th, a period of nearly twenty-five days, there was only a trace of rain which occurred on September 15th. During the summer months the weather was unusually cool but the hot weather from the latter part of August to late September saved particularly the corn crop, enriching the producer to no small extent. The first killing frost in early season fell May 1st, injuring the fruit crop and partially destroying vegetation. The late killing frost was on September 27th, there being one hundred and fifty days without frost.

Corn—The reported acreage is the largest in the state with the exception of Pottawattamie and Plymouth counties. The average yield is placed at thirty-eight bushels per acre and the quality is good. The average price is fifty cents per bushel.

Oats—Thirty-four per cent of the amount grown in the state; average yield twenty-five bushels per acre and the quality is light.

Wheat—Acreage ranks fourth in the state; the yield of spring wheat is placed at twelve bushels per acre and winter wheat at twenty-five bushels per acre.

Rye—Small acreage, not much attention paid to this crop.

Barley—The acreage is placed at 6,630; the yield varies considerable and the quality is not good.

Flax—Total produce will not exceed fifteen hundred bushels.

Buckwheat—Very small acreage.

Millet—Grown principally for the seed.

Sorghum—Very little grown; going out of date.

Timothy—23,160 acres; yield not up to the average; good prices prevail.

Clover—Grown more to fertilize the land and for seed than for hay, although some is sown with timothy.

Prairie Hay—15,590 acres; yield reported at one and a half tons per acre.

Other Garins—Tendency to increase the area of alfalfa; generally three crops have been cut this season, yielding about five tons per acre.

Potatoes—1,900 acres reported; average yield sixty bushels per acre and sells at fifty cents per bushel. The season was not profitable for this crop.

Vegetables—Nearly every variety grown and as a rule all have done well; enough grown to supply the demand at home and some shipped.

Apples—Short crop; injured by early frost. Orchards are receiving more attention.

Other Fruits—Not an average crop; some varieties of fine pears and peaches grown.

Cattle—A noticeable improvement in both beef and dairy classes; dairy industry receiving most attention. There has been an increase in cream separators. While there has been some tuberculosis reported there has been no fatal cases.

Horses—An excellent grade; many fine draft and road horses; good prices prevail and several car loads of fancy road horses have been shipped. No disease reported.

Swine—A general tendency to procure the best in breeding. Several fine herds of Duroc Jerseys and Poland Chinas in the county but very few other breeds represented. No disease reported and good prices prevail.

Sheep—Do not receive the attention they deserve. Very few in the county.

Poultry—Considering the amount invested in poultry it is one of the most profitable industries on the farm. We have many fanciers here who import their birds, paying high prices for them. There are various breeds raised here.

Bees—Not a good year for the production of honey; too much cold weather. There are some apiaries doing a profitable business.

Drainage—More attention paid to tile drainage; thousands of dollars being spent on open ditches, which is a paying investment.

Other Industries—Largely represented.

Lands—Range in price from $40.00 to $200.00 per acre; average price about $80.00 per acre and many transfers have been made during the past season.

Report of Fair—The harvest festival and Interstate Live Stock Fair was held at Sioux City, Iowa, September 7th to 12th inclusive, affording six days for recreation, pleasure, sightseeing and education. Although the opening day generally finds an incompleteness in the installation of exhibits, greater interest was evinced by exhibitors to not delay that work than ever before, and by early afternoon everything was in readiness for the visitor to admire and behold the great aggregation, and to compare the results with the produce of the soil, the orchard, the garden, the pasture, of the housewife's work, of the mechanic, the inventor and the artist. Here was shown the development of the smallest seed to the production of the mammoth pumpkin, from the tiniest flower to production of the finest fruit, from the daintiest piece of needle work to the masterpiece of the artist, from the smallest specimen of animal to the large steer of four thousand pounds and the hog of over eleven hundred. This was the transformation to be seen and accomplished by diligent and willing hands.

The promoters of the fair spared no pains or expense to make this sixth annual event better than the preceding ones. As an educational force and power the fair is becoming an important factor in showing up the wonderful and varied resources of the states embraced in her territory, the garden spot of the great union. There is not an enterprise, factory, farm or a home that is not benefited directly or indirectly. This interstate fair with its marvelous exhibits will do more to broaden the mind, quicken the perception, and increase the knowledge of the visitor than any other enterprise in the same length of time.

A free day was set apart for the pleasure and benefit of old soldiers and children. The minute service of street cars with carriages, automobiles and wagons pressed into service brought hundreds of these people to the fair ground at an early hour which was soon converted into a romping play ground for the thousands of curious, bright and happy hearted little children clothed in their best. The veterans of the civil war with their good wives were as eager to see and learn of the great fair as the little ones. A veteran large drum corps added pleasure to the occasion. It was a record breaking day in attendance for hospitality, yet the sight presented and the good accomplished well repaid the management for the courtesies extended.

The live stock industry was represented by the cream of the best herds and flocks of the west in horses, cattle, swine and sheep. The exhibits in all these departments were never excelled in quality and in number never exceeded, especially is this true of the swine department. Cattle were represented by Shorthorn, Aberdeen Angus, Galloway, Hereford, Red Poll, Holstein and Jersey—the former predominating. Two hundred and seventy pens were filled with nearly one thousand of the finest hogs the sun ever shone on. Duroc Jersey leading in exhibits of Poland China, Chester White and Berkshire, the latter not receiving the attention given to other breeds. One particular individual of the Poland China breed weighing over eleven hundred pounds attracted scores of people to see the massive porker. A special feature of the stock exhibit was the grand display of Percherons and Belgian horses. Their barns were filled at all times with an admiring multitude. The parade of live stock composed of many herds of fine cattle and grand horses on the race track was an imposing event for an admiring and cheering people. More and better sheep were shown than ever before, consisting of Shropshire, Southdown and Oxford. Many of them being imported. It seems strange that more are not engaged in sheep husbandry. There is no stock properly cared for that in the long run will bring a larger remuneration than sheep. They do not exhaust the land but enrich it.

The interstate fair is growing in favor and popularity with exhibitors. It is growing in quality and exhibition importance until its accommodations are inadequate for the exhibits. The show has become of special educational force with the exhibitors. The ambition of the management to have everything first class has found a responsive chord with those who make the show. It has demonstrated the progress and improvement that is being made in the various industries in its territory. Sioux City is located in the center of the finest stock breeding countries in the world and should support one of the best fairs in the country. It has taken nerve to accomplish the good that has been done, and the management will never falter if proper encouragement is given it by the residents of Woodbury county. It has a generous support from outside territory.

FARM PRODUCTS.

Every available inch of space was taken in the agricultural hall. Nearly every known variety of grain, grasses and vegetables grown in this territory were shown in profusion. The interior of the building was nicely decorated with bunting and on all sides were artistically arranged booths in grain and grasses. The exhibit of corn was pronounced by experts to be the largest and best ever exhibited in the corn growing district at this season of the year, much of it being fully matured. The grand show of many varieties won the admiration of every visitor. Vegetables of all kinds were fine and produced in plenty, some of our gardeners shipping surplus to other points.

FRUIT.

The management was happily disappointed in the exhibits of this department, the reported shortage leaving the impression that there would be a meagre show of fruit, but the showing made convinced the most skeptical that this climate and section of the country will produce as fine fruit as is grown in the land. The production of peaches, pears and plums grown in this vicinity, of which there was a most creditable display, were equal, if not better, than of foreign growth. A tree of Russian olives grown on city soil attracted much attention. The fruit is not eaten, the tree being grown for ornamentation, having a peculiar and artistic foliage.

THE DAIRY.

Increasing interest prevails in this department. One hundred and fifteen exhibitors competed for the four hundred and twenty-five dollar offerings on butter. Representatives came from Iowa, Minnesota, South Dakota, Illinois, Indiana, Ohio and Wisconsin, showing the wide scope that attracts exhibitors to the interstate fair.

APIARY EXHIBIT.

While the lack of continuous spells of warm weather made it a poor year for the busy bee, detracting from the usual production of honey, the exhibits and number of exhibitors averaged well with former fairs. One building is entirely devoted to this exhibit and there was no lack of interest. An interesting and educational feature being the handling of bees and the methods of extracting honey by illustration twice each day.

PLANTS AND FLOWERS.

Plants and flowers showed a large increase in the number of varieties shown, and noticeable was the display made by foreign exhibitors. The space allotted to this exhibit was inadequate yet the arrangement presented a beautiful sight and was the magnet that attracted many people to this part of industrial hall.

PANTRY, KITCHEN AND FINE ARTS.

Occupying one-half of the large industrial hall and with over two hundred feet of showcase room the space was inadequate for these exhibits. There was a marked increase in number of exhibitors. It was a tempting show in the display of bread, cake and culinary goods. The fine display of embroideries, lace work and household goods, the beautiful paintings and pictures, the large and handsome display of hand-painted china won admiration and praise from every visitor.

MACHINERY.

While there were not as many exhibitors as in the previous year the allotted space was all taken. The arrangement and value of exhibits were much better. Every conceivable kind of labor-saving machinery adapted to the farm or home was shown and exhibitors were profuse in their demonstrations of value and use from the seed tester to the ponderous engine. It was evident that farmers are studying the best methods of transportation as many automobile wagons were contracted for. One firm spent five thousand dollars to make a special exhibit. Their sales and contracts amounted to over thirty thousand dollars, showing conclusively that the fair is the place to advertise.

The display of cream separators was never excelled. In fact it was larger than was reported from more pretentious fairs. The gasoline milking machine was a great center of attraction. On a raised platform occupied by two cows, two exhibitions were given each day, demonstrating the method of extracting the milk. It was a novel sight yet of educational value to the dairyman and farmer.

CHILDREN'S DEPARTMENT.

Never in the history of the association was a larger or more creditable display made by the children in farm products, paintings, needle work, bread and cake. Their execution of work, especially in paintings, showed talent and diligence and would have been meritorious to older minds. A friendly rivalry existed among the young exhibitors, and while some were disappointed in not winning the blue and red ribbons, they went away not discouraged but determined to yet excel their rivals. Further encouragement could be given the children with beneficial results by increased premiums.

ATTRACTIONS.

No department of the fair, no matter how important or of educational force attracts the same attention as does the race track with its speed contests and free attractions. It is the common center for all who attend the fair. The large purses offered, exceeding many state fairs, for the trotter, pacer and runner, resulted in bringing out the best field of horses that ever assembled at Woodland Park track. The race enthusiasts showed their appreciation by turning out in large numbers. The former track record was broken in the time of 2:04½. The six best free attractions that could be procured were presented each afternoon in front of the grand stand, and with six bands of music gave entertainment and pleasure that the people enjoyed.

A new and novel innovation of the fair was the Scottish games and dances given in open air exhibition by the members of the St. Andrews Society of Sioux City in front of the grand stand. These exercises were witnessed by a vast concourse of people and were enthusiastically received.

WORTH.

E. H. Miller, Northwood, September 24, 1908.

General Condition of Crops and Season—Fair crop; oats as a rule were light in weight and yielded from ten to thirty bushels per acre. Corn is fine, except on low lands where it was badly damaged by wet weather in the fore part of the season.

Corn—Fine prospect, except on low lands.

Oats—Medium crop, light in weight and yield.

Rye—Very little grown but what we have is a fair crop.

Barley—Very good in quality and yield.

Flax—Good crop; fine quality.

Buckwheat—Very little raised.

Millet—Not much raised.

Sorghum—Not much grown.

Timothy—Splendid crop and saved in fine condition.

Clover—Good crop; some being cut for seed.

Prairie Hay—Good crop.

Potatoes—Crop is fair on the high ground but nearly a failure on the low land.

Vegetables—Mostly very good.

Apples—Small crop and very high.

Other Fruits—Not very plentiful.

Cattle—Stockers plentiful and cheap.

Horses—Twenty-five per cent cheaper than last year.

Swine—About the usual number and are high in price.

Sheep—Only kept here in small flocks.

Poultry—Plentiful; about the usual number of young raised.

Bees—Have done very well until the recent dry weather.

Drainage—Quite a large acreage is being drained by dredge and tile drains.

Lands—Lands are holding their own but very little is changing hands.

Report of Fair—Held September 14, 15 and 16, 1908. Weather fine; attendance large and more exhibits than we have had for years.

WRIGHT.

CHAS. ROTZLER, CLARION, OCTOBER 8, 1908.

General Condition of Crops and Season—Fair.
Corn—Good.
Oats—Fair.
Barley—Good.
Timothy—Fair.
Clover—Good.
Prairie Hay—Good.
Potatoes—Fair.
Vegetables—Good.
Apples—Good.
Other Fruits—Good.
Cattle—Good.
Horses—Good.
Swine—Good.
Sheep—Good.
Poultry—Good.
Bees—Good.
Drainage—Not very good.
Other Industries—Good.
Lands—Good.
Report of Fair—Held September 2, 3 and 4, 1908.

1908 FINANCIAL STATEMENTS OF COUNTY AND DIS

Number	County or District	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
1	Adair		$ 2,624.15	$ 200.00	$ 2,824.15
2	Adair District		2,550.85	175.38	2,726.23
3	Adams	$ 105.00	3,118.00	200.00	3,423.00
4	Allamakee	117.61	1,827.36	168.40	2,113.37
5	Audubon	115.23	3,414.10	200.00	3,729.33
6	Benton		2,697.00	200.00	2,897.00
7	Black Hawk—La Porte City District		1,605.20	153.40	1,758.60
8	Boone—(Ogden)	37.47	1,481.97	188.56	1,708.00
9	Boone—Driving and Fair Association		1,531.55	176.24	1,707.79
10	Buchanan	55.56	820.36	200.00	1,075.92
11	Buena Vista	57.45	4,365.69	200.00	4,623.14
12	Butler	7.38	2,309.99	200.00	2,517.37
13	Calhoun—(Manson)	214.18	2,645.32	200.00	3,059.50
14	Calhoun—Rockwell City Fair Assn		8,221.81	100.34	8,322.15
15	Cass	299.86	4,633.45	200.00	5,133.31
16	Cass—Massena District	135.77	3,232.73	200.00	3,568.50
17	Cedar—Tipton Fair Association		1,541.45	200.00	1,741.45
18	Cerro Gordo—Nor. Ia. Agri. Assn		11,910.40	200.00	12,110.40
19	Chickasaw—Big Four Fair Assn	1,491.57	3,046.62	200.00	4,738.19
20	Clayton—Strawberry Point District	52.92	2,702.67	200.00	2,955.59
21	Clayton—(National)	11.57	2,877.25	200.00	3,088.82
22	Clayton—Elkader Track & Fair Assn		2,984.75	200.00	3,184.75
23	Clinton—(De Witt)		5,799.30	200.00	5,999.30
24	Clinton—Clinton District		4,540.55	200.00	4,740.55
25	Crawford	260.00	1,448.08	137.60	1,845.68
26	Davis	96.02	3,255.66	200.00	3,551.68
27	Delaware	6.74	1,907.81	200.00	2,114.55
28	Fayette	417.49	4,040.72	200.00	4,658.21
29	Fayette—Oelwein District		1,106.00	200.00	1,306.00
30	Floyd	59.16	2,428.92	198.00	2,686.08
31	Grundy	644.76	2,384.27	200.00	3,229.03
32	Guthrie		2,687.05	200.00	2,887.05
33	Hamilton	3.21	2,286.29	200.00	2,489.50
34	Hancock		3,247.18	200.00	3,447.18
35	Hardin	60.57	5,465.55	200.00	5,726.12
36	Harrison	305.26	1,720.90	190.80	2,216.96
37	Henry	529.39	6,567.12	200.00	7,296.51
38	Henry—Winfield Association	36.76	3,047.01	200.00	3,283.77
39	Humboldt		2,343.13	200.00	2,543.13
40	Iowa	5.16	2,139.90	156.00	2,301.06
41	Iowa—Victor District	163.41	2,930.57	160.00	3,253.98
42	Iowa—Williamsburg Association	194.69	2,203.55	200.00	2,598.24
43	Jackson	962.21	4,487.50	200.00	5,649.71
44	Jasper	553.24	4,068.25	200.00	4,821.49
45	Jefferson		3,196.35	200.00	3,396.35
46	Johnson	56.02	3,335.67	200.00	3,591.69
47	Jones	596.15	4,613.62	200.00	5,409.77
48	Jones—Anamosa Association	145.44	4,290.14	200.00	4,635.58
49	Keokuk—What Cheer District		4,087.25	200.00	4,287.25
50	Kossuth	42.84	5,596.00	200.00	5,838.84
51	Lee	228.61	1,977.05	197.10	2,402.76
52	Lee—West Point District	42.53	2,665.32	169.92	2,877.77
53	Linn—Wapsie Valley Association	337.11	2,441.30	200.00	2,978.41
54	Linn—Prairie Valley Association	64.87	1,708.00	200.00	1,972.87

TRICT FAIRS IN IOWA RECEIVING STATE AID 1908.

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Special premiums	Other premiums		Balance Nov. 1, 1908	Overdraft	Value of property	Indebtedness	Number
$ 1,226.00	$ 704.00	$ 619.05	$ 2,579.05	$ 215.10		$ 6,300.00	$ 800.00	1
2,254.33		438.25	2,692.58	33.65				2
1,305.00	1,070.00	880.00	3,255.00	168.00		10,000.00		3
1,467.37	225.00	421.00	2,113.37			4,000.00		4
1,748.93	1,337.50	642.90	3,729.33			7,000.00		5
1,071.64	1,084.00	579.50	2,735.14	161.86		6,000.00	$ 2,000.00	6
522.62	840.00	383.50	1,746.12	12.48		3,000.00	300.00	7
839.85	176.50	471.40	1,487.75	220.25		6,000.00	2,464.00	8
917.19	350.00	440.60	1,707.79			11,000.00	4,607.00	9
1,266.53	268.00	507.64	2,042.17		$ 966.25	10,000.00	500.00	10
1,684.27	2,150.00	1,101.00	4,935.27		312.13	15,000.00		11
874.29	847.58	586.57	2,308.44	208.93		4,500.00	400.00	12
2,079.30	260.10	685.75	3,025.15	34.35		5,000.00	2,600.00	13
9,628.89	1,787.50	250.85	11,667.24		3,345.09	10,000.00		14
1,985.95	1,309.50	906.80	4,292.25	841.06		9,000.00	2,900.00	15
1,507.04	750.00	537.00	2,794.04	774.46		3,500.00		16
766.60	225.50	1,160.70	2,152.80		411.35	7,000.00	3,348.23	17
9,144.84	2,075.00	800.05	12,019.89	90.51		24,000.00	6,436.87	18
2,415.42		883.00	3,298.42	1,439.77		6,500.00	2,700.00	19
1,687.75	610.00	635.77	2,933.52	22.07		3,200.00	1,000.00	20
1,565.23	584.75	716.90	2,866.88	221.94		3,000.00	450.00	21
2,275.59	779.15	669.35	3,724.09		539.34	6,000.00	4,580.00	22
2,511.60	1,605.50	1,075.50	5,192.60	806.70		5,000.00	1,500.00	23
3,903.75	1,900.00	1,036.80	6,840.55		2,100.00	12,047.78		24
824.66	210.75	344.20	1,379.61	466.07		8,000.00		25
839.53	1,431.25	1,039.85	3,310.63	241.05		7,000.00	900.00	26
1,285.90	247.50	549.25	2,082.65	31.90		4,800.00	2,645.60	27
2,375.40	495.00	755.95	3,626.35	1,031.86		10,000.00		28
93.00	340.00	822.50	1,255.50	50.50		1,600.00	400.00	29
1,081.93	100.00	495.00	1,676.93	1,009.15		5,000.00	935.00	30
1,242.03	470.99	625.85	2,338.87	890.16		5,000.00		31
1,291.12	825.00	622.80	2,738.92	148.13		8,000.00	1,200.00	32
1,289.33	1,193.25	575.20	3,057.88		568.38			33
1,925.93	772.50	639.25	3,337.68	100.50		4,000.00	1,000.00	34
2,885.00	1,960.00	806.00	5,651.00	75.12		10,000.00	200.00	35
875.84	665.50	477.00	2,018.34	198.62		15,000.00		36
2,541.98	2,600.00	1,159.36	6,301.34	995.17		12,500.00		37
1,116.70	1,215.00	945.00	3,276.70	7.07		8,000.00		38
1,591.01	332.50	723.75	2,647.26		104.13	3,000.00	200.00	39
1,328.93	1,053.25	390.00	2,772.18		471.12	5,000.00	1,961.12	40
1,893.97	796.25	400.00	3,090.22	163.76		2,500.00	800.00	41
1,138.00	800.00	650.00	2,588.00	10.24		5,000.00	2,500.00	42
2,407.20	2,250.00	759.71	5,416.91	232.80		10,000.00	2,500.00	43
1,498.52	1,836.25	1,017.70	4,352.47	469.02		6,000.00	1,300.00	44
1,272.41	1,470.00	1,080.70	3,823.11		426.76	7,000.00	1,850.00	45
1,568.59	962.50	936.85	3,467.94	123.75		20,000.00	5,268.00	46
3,408.94	850.00	517.33	4,776.27	633.50		3,500.00		47
2,891.86	1,150.00	558.62	4,600.48	35.10		10,000.00	2,100.00	48
1,652.75	2,100.00	634.50	4,387.25		100.00	6,000.00		49
2,406.97	1,897.50	1,227.60	5,532.07	306.77		16,000.00	5,903.84	50
1,125.64	616.00	492.75	2,234.39	168.37		2,000.00		51
1,100.46	1,300.00	424.79	2,825.25	52.52		4,000.00	2,150.00	52
1,791.30		1,185.73	2,977.03	1.38		5,000.00	2,325.00	53
1,504.95	175.00	620.75	2,300.71		327.83	4,100.00	900.00	54

1908 FINANCIAL STATEMENTS OF COUNTY AND DISTRICT FAIRS

Number	County or District	Receipts			
		Balance on hand	Miscellaneous receipts	State appropriation	Total
55	Louisa—Columbus Jct. Association	60.75	4,048.16	200.00	4,308.91
56	Lyon	1,094.67	7,897.00	200.00	9,191.67
57	Madison	32.00	3,025.00	200.00	3,257.00
58	Mahaska—New Sharon District	44.11	2,991.18	200.00	3,235.29
59	Marion—Lake Prairie District		2,810.65	200.00	3,010.65
60	Marshall	1,062.59	8,620.26	200.00	9,882.85
61	Marshall—Eden District	105.19	1,307.40	200.00	1,612.59
62	Mills		3,850.10	157.14	4,007.24
63	Mitchell	358.38	1,923.70	200.00	2,482.08
64	Monona		1,896.50	200.00	2,096.50
65	Muscatine—Union District	22.59	4,885.50	200.00	5,108.09
66	Muscatine—Wilton Association		2,604.20	172.84	2,777.04
67	O'Brien—(Sutherland)	220.00	2,618.92	200.00	3,038.92
68	O'Brien—Sheldon District	989.40	5,201.45	200.00	6,390.85
69	Page—Clarinda Association	1,448.11	5,342.54	200.00	6,990.65
70	Page—Shenandoah Association		9,013.87	200.00	9,213.87
71	Pocahontas—Big Four District	106.84	5,040.35	192.00	5,339.19
72	Pottawattamie	401.42	6,706.98	200.00	7,308.40
73	Poweshiek—(Malcom)	54.24	2,907.05	200.00	3,161.29
74	Poweshiek—(Grinnell)	668.53	3,727.30	200.00	4,595.83
75	Ringgold—Tingley Association		453.50	175.76	629.26
76	Sac		4,041.58	200.00	4,241.58
77	Shelby		4,229.79	200.00	4,429.79
78	Sioux	394.39	1,702.16	169.26	2,265.81
79	Story		2,055.40	200.00	2,255.40
80	Tama	1,683.02	3,383.36	200.00	5,266.38
81	Taylor		1,850.87	159.35	2,010.22
82	Union—Creston District	283.10	4,942.12	200.00	5,425.22
83	Van Buren—Milton District	2.18	1,789.82	180.00	1,972.00
84	Warren		4,065.79	200.00	4,265.79
85	Winnebago—Forest City Association	35.05	1,163.00	200.00	1,398.05
86	Winnebago—Buffalo Center Assn	67.84	967.00	148.86	1,183.79
87	Winneshiek	548.04	2,261.00	200.00	3,009.04
88	Woodbury—Interstate Livestock Fair	22,570.93	42,579.89	200.00	65,350.82
89	Worth	128.01	1,251.25	200.00	1,579.26
90	Wright		2,019.62	175.30	2,194.92
	Total	$ 40,894.59	$341,333.03	$ 17,302.25	$ 399,529.87
	For comparison with 1906 statement 84 fairs	$ 11,338.32	$298,725.41	$ 16,532.61	$ 326,596.34

IN IOWA RECEIVING STATE AID 1908—CONTINUED

Disbursements				Profit and Loss		Assets and Liabilities		
Miscellaneous expense	Special premiums	Other premiums	Total	Balance Nov. 1, 1908	Overdraft	Value of property	Indebtedness	Number
2,141.12	1,080.00	1,211.60	4,432.72	----------	123.81	5,000.00	3,150.00	55
3,423.73	3,125.00	771.75	7,320.48	1,871.19	----------	16,674.81	----------	56
1,400.00	842.00	983.00	3,225.00	32.00	----------	4,600.00	2,500.00	57
1,140.00	1,300.00	606.00	3,046.00	189.29	----------	6,000.00	400.00	58
2,487.57	525.00	603.65	3,616.22	----------	605.57	7,000.00	----------	59
4,595.52	1,825.55	1,841.60	8,262.67	1,620.18	----------	20,000.00	----------	60
973.77	----------	638.82	1,612.59	----------	----------	2,400.00	355.00	61
1,944.64	1,669.75	392.85	4,007.24	----------	----------	5,000.00	520.33	62
1,331.31	52.48	527.50	1,911.29	570.79	----------	4,000.00	----------	63
498.75	973.25	624.50	2,096.50	----------	----------	12,000.00	2,400.00	64
1,048.84	1,768.00	1,579.75	4,396.59	711.50	----------	5,000.00	----------	65
1,163.27	1,203.00	432.10	2,998.37	----------	221.33	2,000.00	----------	66
1,852.71	279.00	673.90	2,805.61	233.31	----------	4,500.00	1,500.00	67
3,199.43	2,146.00	804.00	6,149.43	241.42	----------	3,000.00	----------	68
5,403.12	665.01	667.65	6,735.78	254.87	----------	10,000.00	----------	69
6,179.88	1,873.58	924.20	8,977.66	236.21	----------	12,000.00	1,250.00	70
1,777.29	2,600.00	480.00	4,857.29	481.90	----------	10,000.00	1,250.00	71
4,280.69	1,197.70	762.67	6,241.06	1,067.34	----------	7,000.00	----------	72
1,236.89	1,250.00	596.00	3,082.89	78.40	----------	6,000.00	----------	73
2,138.07	1,465.00	557.50	4,160.57	435.26	----------	9,000.00	3,875.00	74
703.80	----------	439.40	1,143.20	----------	513.94	4,000.00	----------	75
1,573.06	1,820.00	516.10	3,909.16	332.42	----------	6,000.00	----------	76
1,862.28	1,825.00	819.46	4,507.74	----------	77.95	8,000.00	----------	77
1,143.75	307.10	437.15	1,888.00	377.81	----------	3,500.00	600.00	78
1,210.75	----------	958.13	2,168.88	86.52	----------	4.500.00	3,465.85	79
3,750.96	1,150.00	721.52	5,622.48	----------	356.10	5,000.00	----------	80
810.87	919.35	398.35	2,128.57	----------	118.35	4,000.00	----------	81
1,953.89	2,648.75	813.50	5,416.14	9.08	----------	10,000.00	----------	82
824.10	678.00	450.00	1,952.10	19.90	----------	4,000.00	1,650.00	83
1,257.63	1,741.25	930.00	3,928.88	336.91	----------	14,000.00	7,600.00	84
806.50	74.25	596.31	1,477.06	----------	79.01	4,000.00	----------	85
710.28	124.50	372.15	1,206.93	----------	23.14	2,500.00	1,000.00	86
2,225.48	----------	535.75	2,761.23	247.81	----------	5,000.00	----------	87
28,908.58	17,200.00	6,384.76	52,493.34	12,857.48	----------	----------	----------	88
797.75	213.00	521.68	1,532.43	46.83	----------	4,000.00	175.00	89
786.67	970.00	438.25	2,194.92	----------	----------	5,000.00	2,500.00	90
$200,643.78	$106,567.09	$69,039.52	$376,250.39	$35,071.06	$11,791.58	$619,722.59	$107,815.84	
$161,231.53	$ 89,526.49	$58,222.94	$308,980.96	$23,316.34	$ 5,700.96	$518.996.42	$101,157.01	

PART XIV

Horse Breeding Industry in Iowa

List of State Certificates Issued to May 1, 1909

(For copy of laws goveren state enrollment of Stallions see Part XV)

The Iowa law requiring the owner or keeper of all pure bred stallions standing for public service, or kept for sale or exchange, to take out a state certificate was enacted by the Thirty-first General Assembly and took effect July 4, 1906. By the provisions of this law the secretary of agriculture is authorized to issue certificates only for such stallions as have been registered in one of the stud book or registry associations having the approval of the U. S. Department of Agriculture. It further provides that the owner or keeper of all other stallions kept for public service, sale or exchange, must advertise such stallion or stallions as grades.

While it may seem to some that this law imposes an unjust tax on the pure bred horse, it has done a wonderful amount of good in ridding the state of a large number of worthless grade and scrub stallions. The law is lame in some respects: First, there should be some provision compelling owners to report to the secretary of agriculture the death or removal from the state of any stallion, that the county list would show horses in actual service; second, section 2341-c of the law should be so amended that all advertisements of whatsoever nature, whether bills, cards or newspaper advertisements, for stallions not having state certificate, should contain in plain, bold letters the words "grade stallion."

From July 4, 1906, to May 1, 1909, fifty-three hundred and twenty-nine certificates and seven hundred and twenty-two transfers have been issued. The rank by breeds and percentage of total is as follows: First, Percheron, 42; second, American trotter, 14.5; third, Belgian, 12.5; fourth, Shire, 11; fifth, French draft, 9; sixth, Clydesdale, 5.5. The balance of the certificates cover ten different breeds, viz.: German coach, Hackney, French coach, Morgan, Oldenburg coach, Shetland ponies, saddle horses, thoroughbreds, Suffolk and Cleveland Bay.

It is the duty of the county attorney in each county within the state to prosecute any of the violations of this law when evidence of any such violation is laid before him.

REGULATIONS FOR THE CERTIFICATION OF ASSOCIATIONS OF BREEDERS OF PURE BRED LIVE STOCK AND BOOKS OF RECORD OF PEDIGREES.

U. S. Department of Agriculture, Office of the Secretary,
Washington, D. C., June 20, 1906.

In accordance with paragraph 473 of the act of Congress, entitled, "An act to provide revenue for the government and to encourage the industries of the United States," approved July 24, 1897, authorizing the Secretary of Agriculture to "determine and certify to the Secretary of the Treasury what are recognized breeds and pure bred animals," as amended by the act of Congress approved March 3, 1903, entitled, "An act regulating the importation of breeding animals," the following regulations are hereby prescribed for the certifications of associations of breeders of pure bred live stock and books of record of pedigrees:

CERTIFICATION OF AMERICAN ASSOCIATION AND BOOKS OF RECORD—APPLICATION FOR CERTIFICATION.

1. Any association in the United States desiring certification by the Secretary of Agriculture to the Secretary of the Treasury, under the provisions of paragraph 473 of the act of July 24, 1897, as amended March 3, 1903, shall submit the following:

(a) If incorporated with capital stock, a statement showing amount of capital and number of shares, the names of incorporators, names and residences of directors and officers, names and residences of shareholders, with the amount of stock held by each, and a copy of its charter.

(b) If unincorporated, or if incorporated without stock, a statement showing the names and residences of officers and directors, and the names and residences of members. An association incorporated without capital stock shall submit a copy of its charter.

(c) A statement of the foreign associations with which it is affiliated, with the names and addresses of the custodians of their books of record, a copy of its constitution and by-laws and rules of entry, and copies of all blank forms used in the conduct of its business, such as applications for registry, certificate of registry, transfer, etc.; a complete set of the published volumes of its book of record (unless already on file), and a statement of its financial condition on the 30th of June preceding date of application.

REGULATION OF CERTIFIED ASSOCIATIONS.

2. (a) Each certified association shall submit a copy of each volume of its book of record to the Department as soon as published. The Department advises that at least one volume be published annually; however, in cases where circumstances make it impossible to do this, a statement

shall be submitted showing how often the book of record will be published, and his statement will be considered. The schedule so adopted shall be adhered to, but the interval allowed between publication of any two volumes shall not exceed four years.

(b) On or before August 1 of each year, each certified association shall submit to the Department a report of its operations during the preceding fiscal year. This report shall include a statement of the number of animals of each sex registered during the year, and the number of imported animals of each sex registered, with the countries from which they were imported; also copies of any changes that may have been made during the year in the constitution and by-laws, rules of entry, or blank forms used by the association in the conduct of its business. Operations during the fiscal year ending June 30, 1906, are partially covered by reports already submitted, and, therefore, a report will not be required on August 1, 1906, but the report for August 1, 1907, shall cover the period of eighteen months from January 1, 1906, to June 30, 1907.

(c) No change shall be made by a certified American association in its rules of entry, constitution, or by-laws concerning the registration of imported animals unless first submitted to and approved by the Department. Changes in the person or place of business of the custodian of the book of record shall be reported without delay.

(d) The report required by the preceding paragraph shall also include a statement of the books of record published during the preceding fiscal year by the affiliated foreign associations. Any changes in the person or place of business of the custodians of such books of record shall be promptly reported to the Department by the secretaries of certified affiliated American associations. The foreign associations with which certified American associations are affiliated are given in paragraph 6 of this order. By the term "affiliated associations" the Department means an association whose pedigree certificates are accepted for record by a certified American association.

(e) To simplify the methods formerly used to ascertain the pure breeding of animals imported for breeding purposes, the Department has recommended to the Secretary of the Treasury that in all cases where a foreign association is affiliated with a certified American association the certificate of the custodian of the book of record of the latter, and no other, that animals are pure bred, of a recognized breed, and duly registered in the books of records established for that breed, shall be accepted by the officers of the customs as sufficient to entitle such animals to free entry. . No such imported animals, certificate of whose registration is to be presented to the customs officers for free entry, shall be registered by a certified American association unless they are pure bred, of a recognized breed, and duly registered by one of the affiliated foreign associations in its book of record established for that breed, or from sires and dams so registered, except that registration in Canadian books of record may be recognized where animals so registered trace on both sides to stock registered by a certified foreign association for the same breed, affiliated with a certified American association for that breed. Registration contrary to the provisions of this paragraph of imported animals registered in books of record not included in section 6 of this order, or in one of the amendments to this order, to obtain the duty-free privilege for such animals, will render an association registering such animals liable to withdrawal of certification.

(f) Should any association fail to act in conformity with any or all of these regulations, notice shall be sent at once to such association. Failure to comply within thirty days after sending of such notice, or to submit reasonable explanation for the delay, shall be regarded as sufficient ground for the withdrawal of the certification of the Secretary of Agriculture.

(g) Statements made under the provisions of these regulations shall be under oath by the secretary of each association.

(h) Each association in the United States which has or may have the certification of the Secretary of Agriculture shall hold all its books open to inspection by the proper officer of this Department at any time.

CERTIFICATION OF FOREIGN ASSOCIATIONS AND BOOKS OF RECORD.

3. When a foreign association desires the certification of the Secretary of Agriculture, the custodian of its book of record shall submit to the Department a complete set of the published volumes of such book of record to date of making application, forwarding them to the address given in paragraph 4 of this order. When such foreign association is affiliated with one or more certified American associations, the official indorsement of the custodians of the books of record of the latter shall be shown, stating that such foreign associations register only animals which are pure bred and of a recognized breed. The Department reserves the right, however, to be governed in all cases by the advice of representatives of the United States abroad, if the necessity for such a course exists.

4. Custodians of the books of record of certified foreign associations shall submit the volumes of their books of record direct to the Department as soon as published, addressing them to the Chief of the Bureau of Animal Industry, in care of the United States Dispatch Agent, 277 Broadway, New York, N. Y., U. S. A.

OFFICIAL COMMUNICATIONS.

5. All books of record, official papers, reports, and other communications submitted under the provisions of this order should be addressed to the Chief of the Bureau of Animal Industry, Department of Agriculture, Washington, D. C., except as mentioned in the preceding paragraph.

CERTIFIED AMERICAN ASSOCIATIONS AND AFFILIATED FOREIGN ASSOCIATIONS.

6. The following American associations and books of record have been certified to the Secretary of the Treasury on this date. Immediately opposite the names of certified American associations are shown the foreign associations and books of record with which they are affiliated. To obtain the duty-free privilege, certificates of the latter, and not others, except as provided in section 2, paragraph (e), of this order, shall be accepted by American associations for record, subject to proper scrutiny under the provisions of this order.

STUDBOOKS RECOGNIZED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE.

HORSES.

American Books of Record.

American Trotter	American Trotting Register.	American Trotting Register Association, Wm. H. Knight, secretary, 355 Dearborn street, Chicago, Ill.
Belgian Draft.	American Register of Belgian Draft Horses.	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay.	American Cleveland Bay Studbook.	Cleveland Bay Society of America, R. P. Stericker, secretary, 80 Chestnut avenue, West Orange, N. J.
Clydesdale ...	American Clydesdale Studbook.	American Clydesdale, Association, R. B. Ogilvie, secretary, Union Stock Yards, Chicago, Ill.
French Coach.	French Coach Horse Register.	French Coach Horse Registry Company, Charles C. Glenn, secretary, Columbus, Ohio.
French Coach.	French Coach Studbook.	French Coach Horse Society of America, Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.
French Draft..	National Register of French Draft Horses.	National French Draft Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
German Coach.	German, Hanoverian, and Oldenburg Coach Horse Studbook.*	German, Hanoverian, and Oldenburg Coach Horse Association of America, J. Crouch, secretary, Lafayette, Ind.
Hackney	American Hackney Studbook.	American Hackney Horse Society, Gurney C. Gue, Secretary, Tichenor Grand Bldg., 61st St. and Broadway, New York, N. Y.
Morgan	American Morgan Register.	American Morgan Register Association, H. T. Cutts, secretary, Middlebury, Vt.
Percheron	Percheron Studbook of America.†	Percheron Society of America, Geo. W. Stubblefield, secretary, Union Stock Yards, Chicago, Ill.
Percheron	Percheron Register......	The Percheron Registry Company, Chas. C. Glenn, secretary, Columbus, Ohio.
Percheron	The American Breeders' and Importers' Percheron Register.	The American Breeders' and Importers' Percheron Registry Company, John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse..	American Saddle Horse Register.	American Saddle Horse Breeders' Association, I. B. Nall, secretary, Louisville, Ky.
Shetland Pony.	American Shetland Pony Club Studbook.	American Shetland Pony Club, Mortimer Levering, secretary, Lafayette, Ind.
Shire	American Shire Horse Studbook.	American Shire Horse Association, Charles Burgess, secretary, Wenona, Ill.
Suffolk	American Suffolk Horse Studbook.	American Suffolk Horse Association, Alex. Galbraith, secretary, De Kalb, Ill.
Thoroughbred .	American Studbook.....	The Jockey Club, James E. Wheeler, registrar, 571 Fifth Avenue, New York, N. Y.
Welsh Pony and Cob	Welsh Pony and Cob Studbook.	The Welsh Pony and Cob Society of America, John Alexander, secretary, Aurora, Ill.

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*Absorbed interest of the Oldenburg Coach Horse Register, C. E. Stubbs, Secretary, Fairfield, Iowa.

†Absorbed interests of the American Percheron Horse Breeders' Association May 9, 1904, whose certificates issued prior to that date only, signed by S. D Thompson, as Secretary, will be recognized.

NUMBER AND CHARACTER OF CERTIFICATES ISSUED TO MAY 1, 1909.

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Adair	12	4	1	7		1					8			18		2	53
Adams	10	2		7		3	1				50			9			82
Allamakee	1	6			1	1					14			1			24
Appanoose	6	1	1	10	1	4					8			7		1	39
Audubon	3	2		6		5	1				9			4			30
Benton	10	11			3	3				1	21			6			55
Black Hawk	11	4		3		2	1		1	1	26		1	17			67
Boone	7	8		2		12					12			2			43
Bremer	3	2		4	1	2			2		9		1				24
Buchanan	5	2				4					21			2			34
Buena Vista	8	5		2		3		1	2		14			7			42
Butler	9	6		2		4				1	15			2			39
Calhoun	9	6			1	4					27			11			58
Carroll	4	7		1		5					22			1	1		41
Cass	10	4		10		5	2		2		21		1	11	2	1	69
Cedar	7					4					17			10			38
Cerro Gordo	3	3		1		1				1	18			5			32
Cherokee	2	4			1	1					19						27
Chickasaw	9	4		12		3	2		1		26			3			60
Clarke	7	10		2		11				1	85			14			131
Clay	2	2		1	1						12			3			21
Clayton	6	7			1	2					16		1	3			36
Clinton	5	5				5					13			3			31
Crawford	5	8		1		6	2			1	13			1	2		39
Dallas	12	11		1		10	1			1	22	1		13			72
Davis	8			2		15			1		25			1		1	53
Decatur	9	8		2		4		1	1		19			11			55
Delaware	6	161		5	3		25	41			227			11			479
Des Moines	6					4			1		5			2			18
Dickinson	8			2		2					23			3			38
Dubuque	5	12		1		2			1		17			2			40
Emmet	4	3		2	1	2				1	14						27
Fayette	8	11		3	1	3	1				19		1	3			50
Floyd	1	5			2	2	1				17			1			29
Franklin	5	1		2		3	1		1		10			4			27
Fremont	1	2				1				2	13		1	1			21
Greene	5	11		2		5					27			6			56
Grundy	1	1		3	1	1	1	1		3	23						35
Guthrie	13	5		7	1	7		1		1	14			7			56
Hamilton	9	6		1	2				1		23	1	1	2			46
Hancock	1	5		2		3					6			2			19
Hardin	7	4		1		3	1		4	2	28			3			53
Harrison	8	5		2	2						15			3			35
Henry	14	2		6	1	14		1			23			13			74
Howard	1	10		5	1	1					7						25
Humboldt	3	5		1		1	2	1			8			6			27
Ida	7	3		1		3			1		15		1	3			34
Iowa	11	7		18	2	3	1				23			8			73
Jackson	11	9		1		3					14			1			39
Jasper	9	2		6	2	5	2	1			31	2		7		1	68
Jefferson	18	4		6		15			1		30	1		13			88
Johnson	10	6		3		13	1				21	1		6			61
Jones	7	8		12	1	3			1		9			4			45
Keokuk	9	5		10	1	10	1				30			15			81
Kossuth	4	8		3	2	3	1				23			9			53
Lee	9			1		2					10			1			23
Linn	17	86		3	1	2		1	1		52	1	1	7		1	173
Louisa	8	6		1	1	1					27			2			45
Lucas	5	2		6		7			9		60		1	11			101
Lyon	2	2				3	1				20						28
Madison	6	3			2	6	1	1	1		23	1		11			55
Mahaska	7	3		11	1	21		1			31	1	1	6	1		84
Marion	16	4		6		9		1			24		2	11			73

NUMBER AND CHARACTER OF CERTIFICATES—CONTINUED

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenburg Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Marshall	11	3	----	5	----	4	----	----	----	----	17	----	1	4	----	----	45
Mills	6	1	----	----	----	----	----	----	----	1	13	----	----	11	----	----	32
Mitchell	8	2	----	3	1	4	1	----	2	----	19	----	----	4	----	----	44
Monona	3	2	----	1	----	2	----	----	----	----	18	----	----	----	----	----	26
Monroe	6	----	----	1	----	1	1	----	----	----	8	----	----	8	----	----	25
Montgomery	7	----	----	----	----	3	2	----	1	----	14	----	----	11	----	----	38
Muscatine	15	2	----	----	1	2	----	----	----	----	18	----	2	3	----	----	43
O'Brien	15	3	2	2	1	2	----	1	2	2	26	----	----	5	----	----	61
Osceola	3	3	----	----	----	1	1	----	----	----	13	----	----	2	----	----	23
Page	13	2	----	----	----	14	----	----	1	1	25	----	----	8	----	1	65
Palo Alto	7	1	----	1	----	2	----	----	----	----	16	----	----	7	----	----	34
Plymouth	1	5	----	1	1	----	1	----	----	1	13	----	----	----	1	1	25
Pocahontas	8	5	----	2	----	7	----	----	----	----	21	----	----	5	----	2	50
Polk	19	11	----	1	----	9	1	----	1	----	31	1	----	14	----	----	88
Pottawattamie	13	7	----	2	2	5	3	----	2	----	23	----	----	7	1	----	65
Poweshiek	10	11	----	8	----	1	----	----	1	----	15	----	1	10	1	----	58
Ringgold	9	3	----	4	----	7	1	----	1	----	28	----	----	5	1	----	59
Sac	10	7	----	7	----	3	----	----	----	----	20	----	----	6	----	----	53
Scott	6	1	----	----	1	1	----	----	----	1	7	----	----	----	----	----	17
Shelby	4	3	----	----	1	2	----	----	1	----	16	----	----	3	----	----	30
Sioux	5	1	----	3	----	2	----	----	----	----	19	----	----	1	----	----	31
Story	7	7	----	3	1	6	----	----	2	----	39	----	----	5	----	----	68
Tama	14	5	----	9	1	5	----	----	----	----	31	----	----	6	----	----	71
Taylor	14	11	----	5	----	10	1	----	----	----	73	----	----	14	----	----	128
Union	8	7	----	1	2	11	----	----	2	----	53	----	----	35	----	----	119
Van Buren	3	2	----	7	1	9	----	----	----	1	24	----	1	5	----	----	53
Wapello	10	1	----	5	----	4	----	----	----	----	20	----	----	4	----	----	44
Warren	14	3	----	1	1	13	----	----	----	----	44	----	2	14	----	----	92
Washington	10	1	----	----	----	7	----	----	----	----	18	1	----	13	----	----	50
Wayne	8	4	----	----	----	7	----	1	1	----	14	----	----	13	----	----	48
Webster	2	7	----	2	----	8	----	----	----	----	11	----	----	4	----	----	34
Winnebago	4	1	----	----	1	1	----	----	----	----	15	----	----	----	----	----	22
Winneshiek	3	5	----	4	----	2	1	----	----	----	14	----	----	3	----	----	32
Woodbury	6	3	----	2	----	6	1	----	----	----	15	----	----	3	----	----	36
Worth	----	2	----	1	----	----	----	----	1	----	14	----	----	1	----	----	19
Wright	2	2	----	1	----	5	----	----	----	----	15	----	----	4	----	----	29
Horses owned near state line	----	1	----	1	----	----	1	----	----	----	7	----	----	2	----	----	12
Total	731	674	4	292	53	450	65	54	50	23	2280	11	20	588	10	11	5318

DIRECTORY OF OWNERS OF PURE BRED STALLIONS BY COUNTIES.

(Certificates Issued to May 1, 1909.)

ADAIR COUNTY

Cert No.	Name of Owner	Postoffice	Name of Stallion	Breed
396	John McDermott	Bridgewater	Billy Boy 33799	Percheron
394	John McDermott	Bridgewater	Honest Jerry 6374	Shire
1276	Middle River Horse Co	Greenfield	Jerrierais 31111 (43734)	Percheron
1279	C. P. Liegerot	Greenfield	Radio M. 37196	Trotter
1286	A. T. Mason	Greenfield	Top Shot 7718	Shire
1318	A. N. Vandewater	Orient	Ben Faraday 38258	Thoroughbred
1379	E. W. Vandewater	Orient	Orphan Boy 10873	Clydesdale
1380	E. W. Vandewater	Orient	Crasher 9383	Clydesdale
1425	C. C. Havens	Greenfield	Creston Boy 6206	Shire
1528	H. H. Buck	Greenfield	Iowa Lee 40181	Trotter
1532	Fontanelle Coach Horse Co	Fontanelle	Vandyke 1169 (2371)	Cleveland Bay
1533	Fontanelle Percheron Horse Co	Fontanelle	Royaliste 31749 (45143)	Percheron
1554	F. W. Raasch	Bridgewater	Prince Improver 7839	Shire
1558	C. T. Jackson	Orient	Orient Boy 37691	Trotter
1557	C. T. Jackson	Orient	Bob McGregor 9752	Clydesdale
1603	Frank H. Edwards	Orient	Usurper 7567 (20996)	Shire
1630	J. A. Griswold	Greenfield	Billy Grayson 40899	Trotter
1631	J. A. Griswold	Greenfield	Simmons Star 33030	Trotter
1718	Wm. N. Green	Fontanelle	Botha 7003 (19390)	Shire
1757	F. P. Culverson	Greenfield	Counsellor Jr. 34958	Trotter
2220	C. L. Waltz	Spaulding	Toneham Strexton 8533 (23804)	Shire
2266	W. B. Hoskins	Orient	Pride of the West 7842	Shire
2621	F. P. Culverson	Greenfield	Canus 8683	Thoroughbred
2454	G. H. Sawyer	Greenfield	Black Jack IV. 6377 (19343)	Shire
2579	Grove Township Horse Co	Greenfield	Upas 14857 (59588) P	French Draft
2753	John Wynn	Greenfield	Rampton 12709	Clydesdale
67	Wynn Bros	Greenfield	Brampton Harold 6237	Shire
3115	E. J. Oshel	Orient	Joe Swift 37576	Trotter
3158	F. A. Strong	Orient	Wilfrid S. 39403	Trotter
3317	H. A. Alcorn	Adair	Lord Winchilsea 5720 (18170)	Shire
3326	Henion Drew	Orient	Billie Bryan 877	Belgian
3481	D. J. Cowden	Adair	Bishop Whitestockings 43519	Trotter
3501	Henion Drew	Orient	Beau Chief 9074	Shire
3553	Adair Horse Co	Adair	Baron de Bois (Vol. XII)	Belgian
1606	A. E. Johnson	Orient	Soham Insurgent 6735	Shire
3986	Strong Bros	Orient	Nailstone Desert Chief 8829	Shire
4132	W. N. Foster	Orient	Turgot 54390 (64346)	Percheron
3942	J. P. Kembery	Bridgewater	Mongol Best 48019	Percheron
4245	G. W. Hill	Orient	Buzz K. 40414	Trotter
3697	O. T. Truman	Orient	John Perfect 12361	Clydesdale
4410	F. E. Louden	Middle River	Banker 51224	Percheron

ADAIR COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4495	Chris Frank	Fontanelle	Judge 6427	Shire
4286	Chris Frank	Fontanelle	Blythe 3163	Belgian
4856	E. Sulgrove	Bridgewater	Gores Prince 9568	Shire
3074	H. A. Alcorn	Adair	Delwood 43065	Trotter
4935	A. T. Mason	Greenfield	Charon II 8769	Shire
1278	J. G. Dorsey	Greenfield	Vibrant 40702 (48891)	Percheron
5040	J. Pote	Bridgewater	White Sox 14055	Clydesdale
5154	P. F. Hanley	Adair	Mercure de Voll 3232 (45244)	Belgian
5180	Wm. Tannatt & Co.	Fontanelle	Thumper Chief 10364 (25711)	Shire
5187	C. T. Jackson	Orient	Mack See 13001	Clydesdale
5188	C. T. Jackson	Orient	Red Dare 48930	Trotter
5268	H. A. Alcorn	Adair	Rollo King 21247	Percheron

ADAMS COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
562	F. Hoskinson	Corning	Mustapha (53274)	Percheron
489	E. P. Chapman	Prescott	Beaumont 24984	Percheron
493	Holt Township Horse Co.	Corning	Conine 9941	French Draft
417	C. M. Bickford	Mount Etna	Duke of Altorf 21071	Percheron
1029	L. H. Humbert & Son	Corning	Voltaire 45320 (56916)	Percheron
1030	L. H. Humbert & Son	Corning	Sully 21770 (40430)	Percheron
1355	J. M. Devore	Corning	Road Bird 22816	Trotter
1543	H. E. Murdock	Brooks	Lesdiguieres (51818)	Percheron
1537	J. A. Bohanan	Corning	Prince Henry 10238	Clydesdale
178	Wm. F. Hough	Corning	Red Garnet 27132	Trotter
1802	Laban Harrison	Prescott	Prince Mac Lure 11665	Clydesdale
1801	Laban Harrison	Prescott	Demster H. 12145	Clydesdale
2275	J. H. King	Prescott	Kirk 6576	Shire
2292	L. D. Bishop	Brooks	LaSalle Star 37569	Trotter
2293	L. D. Bishop	Brooks	Waterloo 18609	Percheron
2302	E. Humbert	Corning	Pasteur 50660 (65523)	Percheron
2305	E. Humbert	Corning	Manceau 50657 (58834)	Percheron
2306	E. Humbert	Corning	Primo 50661 (64315)	Percheron
2609	Vicker & Blazek	Prescott	Domino 41882 (56570)	Percheron
2623	E. B. Hess	Corning	Good Morning 8822 (21468)	Shire
2650	J. N. B. Miller	Prescott	Brilliant 1372	Belgian
2651	J. N. B. Miller	Prescott	Plumeau d'Acosse 2041 (31098)	Belgian
2652	J. N. B. Miller	Prescott	Franklin 34653	Percheron
2443	E. L. Humbert	Corning	Jerry 29836	Percheron
2738	Hugh Coglan	Corning	Teddy 34721	Percheron
2739	Hugh Coglan	Corning	Frank 43555	Percheron
587	E. P. Chapman	Prescott	Snow Ball 21902	Percheron
2758	James Foy	Prescott	Apollon 26130 (42491)	Percheron
2886	J. N. Ankeny	Prescott	Nailstone Modern Type 7260 (21688)	Shire
2879	J. S. Bowman	Brooks	Counter 15347	French Draft
2896	John H. Oshel	Nevinville	Electralto 23579	Trotter
2931	Humbert & Son	Corning	Sully Jr. 48106	Percheron
3060	E. A. Hoskinson	Corning	Carat 50652 (59920)	Percheron
3192	T. O. Swain	Corning	Hal Parker 034	Trotter
3287	Chas. Long	Corning	Bertie Long 37843	Trotter
3316	E. L. Humbert	Corning	Panama 50659 (52668)	Percheron
3448	Wm. F. Hough	Corning	Idylwild 36075	Trotter
3943	E. L. Humbert	Corning	Neocho 43339	Percheron
3941	E. L. Humbert	Corning	Blue Sully 49694	Percheron
3944	E. L. Humbert	Corning	Alfred Sully 49692	Percheron
3945	E. L. Humbert	Corning	Arthur 52833 (62596)	Percheron
3946	E. L. Humbert	Corning	Ruyter 52839 (64289)	Percheron
3947	E. L. Humbert	Corning	Cremieux 52835 (58976)	Percheron
3948	E. L. Humbert	Corning	Bourbon 52834 (62605)	Percheron
3949	E. L. Humbert	Corning	Mondoin 52836 (58922)	Percheron
3950	E. L. Humbert	Corning	Soleil 52837 (57827)	Percheron
3951	E. L. Humbert	Corning	Inel 52841 (57625)	Percheron
3952	E. L. Humbert	Corning	Evans 52840 (64318)	Percheron

ADAMS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3953	E. L. Humbert	Corning	Joll 52838 (59404)	Percheron
1739	Eno & Heatherington	Corning	Lapon 32832 (46018)	Percheron
4065	E. L. Humbert	Corning	Jay Tee 46467	Percheron
4078	Chas. Cook	Prescott	Fordy Premwilhar 9336 (24803)	Shire
4009	J. C. Reese	Prescott	Sammy R. 45537	Trotter
4432	Labon Harrison & Son	Prescott	King Chattan 13406	Clydesdale
4486	C. C. Cook	Prescott	Stuntney Daniel 9750 (23794)	Shire
4465	J. W. Bigger	Corning	Blue Grass Prince 45008	Trotter
4466	J. W. Bigger	Corning	Gamberton 43364	Trotter
4329	H. C. Reese	Prescott	Boydston Yet 8682	Clydesdale
4374	H. C. Reese	Prescott	Campi 15653 (33911)	Percheron
4268	G. E. Stevens	Corning	Grover 11506	Clydesdale
4533	H. E. Brown	Corning	Montieth Lad 12130	Clydesdale
4550	F. L. Morris	Nodaway	Brown Prince 5344	Shire
4581	F. L. Morris	Nodaway	Soudan 32835 (48313)	Percheron
4587	A. J. Anderson	Nodaway	Admiral 6131	Shire
4588	A. J. Anderson	Nodaway	Royal Prince 6469	Shire
4589	A. J. Anderson	Nodaway	Creston Webster 5947	Shire
4920	L. D. Bishop	Brooks	Duke 17568	French Draft
4949	E. L. Humbert	Corning	Dick 53600	Percheron
4950	E. L. Humbert	Corning	Grey Voltaire 54098	Percheron
4951	E. L. Humbert	Corning	Newcastle 58043 (64985)	Percheron
4952	E. L. Humbert	Corning	Genet 58042 (71265)	Percheron
4953	E. L. Humbert	Corning	Clovis 58034 (61577)	Percheron
4954	E. L. Humbert	Corning	Genereux 58039 (70176)	Percheron
4955	E. L. Humbert	Corning	Gourdin 58040 (69793)	Percheron
4956	E. L. Humbert	Corning	Bismuth 58032 (67578)	Percheron
4957	E. L. Humbert	Corning	Gentry 58037 (72339)	Percheron
4958	E. L. Humbert	Corning	Robert 58045 (65803)	Percheron
4959	E. L. Humbert	Corning	Gentil 58033 (72337)	Percheron
4960	E. L. Humbert	Corning	Nordstern 4591	German Coach
5106	E. L. Humbert	Corning	Francis 54089	Percheron
5238	H. J. Comisky	Corning	Bruno 47349	Percheron
4047	Burgess Allen	Prescott	Black Jack 48069	Percheron

ALLAMAKEE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
384	W. L. Leas	Rossville	Herbert 29743	Percheron
143	M. T. Jacobson	Waterville	Black Ball 24284	Percheron
142	M. T. Jacobson	Waterville	Alfonso 30010	Percheron
445	Jas. McCormick	Waterville	Bold Harry 5514	Shire
640	Elon Draft Horse Assn	Waterville	Gamin De Glabais 1547 (23560)	Belgian
974	John Munz	Church	Lorrain 20557	Percheron
1078	Waukon French Coach Stallion Co.	Waukon	Beau-Sire 3644	French Coach
1098	S. J. Svendson	Dorchester	Camille de Bierset 1548 (23056)	Belgian
1207	C. G. Holming & Co.	R. No. 1, Waukon	Document 710 (4980)	Belgian
1206	C. G. Holming & Co.	R. No. 1, Waukon	Gilbert 21037	Percheron
2686	Jas. Honlihan	Harpers Ferry	Stick 45806 (61875)	Percheron
3039	Henry Grodegut	Waukon	Admiral de Tilly (26770)	Belgian
3205	P. H. O'Neill	Harpers Ferry	Iams Pedro 9870	French Draft
3144	Henry Lenz	Lansing	Bussy 15181 (29810)	Percheron
664	Lansing Draft Horse Co.	Lansing	Bismark de Seumoy 1311 (24150)	Belgian
4311	A. I. Steffen	Waukon	Logan 42037	Percheron
4404	H. H. Conley	Postville	Dr. Cram 42585	Trotter
4527	S. G. Erickson	Postville	Isard 41862	Percheron
4838	S. G. Erickson	Postville	Delcasse 45794 (65021)	Percheron
5322	E. C. Rippe	Lansing	Azor 52289 (68889)	Percheron

APPANOOSE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
121	August Post	Moulton	Wayside Prince 10411	Clydesdale
120	August Post	Moulton	Wayside Douglass 9395	Clydesdale
119	August Post	Moulton	Wayside Regnant 9836	Clydesdale
199	Lincoln Knapp	Centerville	Sisteron 44301 (57869)	Percheron
672	John C. McConnell	Unionville	Keota-Allan 27631	Percheron
858	Eli Smith, Sr.	Unionville	Bury Beauchief II. 6155 (17218)	Shire
1412	W. O. Doggett	Numa	Bob Brooks 43300	Trotter
1539	Smith & Clawson	Cincinnati	Brewer's Delight 6133 (19408)	Shire
2125	J. J. Strickler	Centerville	Black Sluggard 28582	Trotter
2126	J. J. Strickler	Centerville	Baron Dillon Jr. 33402	Trotter
2223	Udell Horse Co.	Udell	Taupin 26104 (46829)	Percheron
2261	W. H. Johnson	Moravia	Forton de Mons 1985 (25500)	Belgian
2588	Marion McCrory	Moravia	Gagnier 12666	French Draft
2770	Lincoln Knapp	Centerville	Keota Ben 7792	Shire
3003	J. R. Hensley	Mystic	Prince Esher 11907	Thoroughbred
3088	W. M. Jackson	Centerville	Dunsmore Klondyke 6164 (18706)	Shire
3087	W. M. Jackson	Centerville	Solide II 22672 (43537)	Percheron
3131	Cincinnati Horse Co.	Cincinnati	Marronier 32421 (48881)	Percheron
2991	C. E. Mathew and W. H. Howard	Moulton	Haddo of Hillsdale 12550	Clydesdale
3191	J. C. Stevenson	Cincinnati	Marksman 881 (991)	Cleveland Bay
3350	Hollingsworth & Vinzant	Centerville	Stettin 34504 (51406)	Percheron
3405	John C. McConnell	Unionville	Hugh Dillon 45361	Trotter
3523	E. G. Swain	Unionville	William J. Bryan 15359	French Draft
3579	D. A. Gregory	Moulton	King Royal 12481	Clydesdale
3638	Thos. E. Hopkins & Son	Unionville	Jack Sawyer 35577	Trotter
3857	Eli Smith, Sr.	Unionville	Bon Bacis 8790 (20281)	Shire
4056	Siler & Hurd	Moulton	Mitron 51377 (59142)	Percheron
1042	Siler & Hurd	Moulton	Bedwell Marquis 8326 (22101)	Shire
4280	J. A. Stice	Moulton	Noble 13413	Clydesdale
2198	Edward Gault	Mystic	King Robert 11918	Clydesdale
4408	C. E. Sawyers	Centerville	Ensign Dillon 47897	Trotter
4521	D. M. Post	Moulton	Success 10153	French Draft
4523	D. M. Post	Moulton	Model George 13058	Clydesdale
4524	D. M. Post	Moulton	Philip 1464	French Coach
4522	D. M. Post	Moulton	King Luzignan 42235	Percheron
4998	J. C. McConnell	Unionville	Sultan 16531	French Draft
5008	J. H. Martin	Moulton	Great Scott 12781	Clydesdale
5080	Eli Smith, Sr.	Unionville	Bury Combine 9692 (22175)	Shire
3042	Jas. Kaster	Moravia	Centerville Prince 5292	Clydesdale

AUDUBON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
353	Oakfield Township Horse Co.	Brayton	Monfino 28464 (44967)	Percheron
89	C. R. Wilson	Exira	Greely 12440	French Draft
93	Melville Draft Horse Co.	Audubon	Bon Rasselas 6064 (17789)	Shire
66	W. W. Weston	Audubon	Prince Brilliant 9854	Clydesdale
657	Pleasant Valley Horse Co.	Fiscus	Champagne Mecht 1340 (25514)	Belgian
713	M. P. Henricksen	Poplar	Uylisse 1714 (28228)	Belgian
1452	L. N. Esbeck	Exira	Enrage 8107 (844)	French Draft
1490	Powell & Harvey	Exira	Sol Phallis 28606	Trotter
2084	Peter N. Esbeck	Kimballton	Sefton 11640	French Draft
2127	J. C. Hardman	Brayton	Prince 11588	Clydesdale
2129	J. C. Hardman	Brayton	Scotland's Crown 10628	Clydesdale
2390	Richard Fancher	Ross	St. Columba 11427	Clydesdale
2128	C. Ward	Exira	Scotland's Hero 10629	Clydesdale
2497	Amos Fancher	Ross	Rattler 11214	Clydesdale

AUDUBON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2604	Jacob Layland	Audubon	Prince Albert 15455	French Draft
2856	Jas. L. Johnson	Exira	Jouteur 25567 (45300)	Percheron
2849	Jas. L. Johnson	Exira	Pastel 41104 (60975)	Percheron
2872	F. O. Niklason	Audubon	Early Union 41555	Trotter
2871	F. O. Niklason	Audubon	King Standette 41388	Trotter
3014	S. S. Wilson	Audubon	Ambulant 3805	German Coach
3340	John Cameron	Audubon	Buster Brown 45297	Percheron
3533	Wm. Layland	Audubon	Major III 7440	Shire
2498	M. T. Foley	Audubon	Fernando 45901 (57820)	Percheron
2719	F. O. Nicholson	Audubon	Royston Prince 11065	French Draft
4351	Chas. Reynolds	Audubon	Imperial 54553 (62298)	Percheron
4378	Wm. Layland	Audubon	Madison Wonder 9744	Shire
4379	Wm. Layland	Audubon	Col. Wm. Johnson 8906	Shire
2089	Christoffer Hanson	Audubon	Admiral Togo 48976	Percheron
355[illegible]	O. Ward	Audubon	Charmant 41630 (59085)	Percheron
5348	S. L. Mantz	Audubon	Gaston de Bossierre 3251 ([illegible])	Belgian

BENTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
185	W. A. Robison	Urbana	Aesop 27805	Trotter
469	John Scolle	Norway	Alexiev 12490	French Draft
638	Chas. Henning	Keystone	Casimir 24720 (46603)	Percheron
628	Rene Horse Co.	Blairstown	Rene 31128 (46800)	Percheron
761	Wm. Thiessen	Keystone	General 2010 (30118)	Belgian
702	David Spurgeon	Shellsburg	Koubo 1109	French Coach
1122	Keystone Belgian Horse Co.	Keystone	Burton 1153 (18464)	Belgian
1269	I. N. Compton	Belle Plaine	Vidocq 10283	French Draft
1293	John Frese	Norway	Chareaubriand 11281 (20027)	Percheron
582	Richard Pickart	Norway	Bucephale de Ninove 1618 (24953)	Belgian
1638	Luzerne Belgian Horse Co.	Luzerne	Oran 1300 (21626)	Belgian
2263	J. R. Patten	Vinton	Star Counsellor 35936	Trotter
2341	Mt. Auburn Horse Co.	Vinton	Go-Ahead 7351 (Vol. 26)	Shire
2380	J. T. Cameron	Vinton	Bolivar 40111 (46462)	Percheron
2480	L. L. Johnson	Vinton	Bernard J. 45324	Percheron
2481	L. L. Johnson	Vinton	Poppleton 45625	Percheron
2503	Eden Township Horse Co.	Van Horn	Gordon de Lierde (25428)	Belgian
2659	C. A. Burris	Garrison	Joe Briselain 28221	Trotter
2660	C. A. Burris	Garrison	Garrison Reaper 44049	Trotter
2200	Wm. Rabe	Keystone	Cambrinus de Lierde 2580 (34288)	Belgian
2264	George & Ross Johnson	Vinton	Masterpiece 29732	Belgian
2465	W. H. Thiessen	Keystone	Moree II 28856	Percheron
2740	W. J. Mullin	Aredale	Travailleur 22656 (45430)	Percheron
2764	F. L. Thompson	Van Horn	Berenice 46035 (60385)	Percheron
2765	F. L. Thompson	Van Horn	Actif 41695 (64674)	Percheron
2766	F. L. Thompson	Van Horn	Mourzouk 2040 (Vol. 12, p. 425)	Belgian
2767	F. L. Thompson	Van Horn	Bazel 39368	Trotter
3063	S. L. Johnson	Garrison	Thabor 41007 (60392)	Percheron
3121	Thos. Sellers	Vinton	Cosaque 41846 (62053)	Percheron
3178	Farmers' Percheron Horse Co.	Vinton	Flambard 41506 (52188)	Percheron
2045	Fry Bros. & Richart	Vinton	Alencon 41424 (61660)	Percheron
3278	Vinton Coach Horse Co.	Garrison	Schappandre 2230	French Coach
3671	T. H. Weil	Blairstown	Rene 49286	Percheron
4107	W. F. A. Rabe	Keystone	Colletts Chieftain 9246 (24828)	Shire
1841	I. N. Compton & Geo. Parks	Belle Plaine	Homestead Dignity 5120	Shire
4194	David Roth	Luzerne	Wakefield 6311 (Vol. 23)	Shire

BENTON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4193	David Roth	Luzerne	Young Regenhald 88 (1554)	Oldenburg Coach
1074	J. C. Stewart, Otto Koopman, Peter N. Kahler & Hessenius	Newhall	Cramptimois 1184 (20380)	Belgian
4436	W. F. Cameron	Vinton	The Connoiseur 47329	Trotter
1089	Ellingson & Weland	Norway	Quandum 2007	French Coach
1497	Ellingson & Weland	Norway	Hardi (22648)	Belgian
4859	Elias L. Pederson	Blairstown	Cossack 42916	Percheron
135	J. T. Cameron	Vinton	Rampart 26915 (45830)	Percheron
4902	Henry Anderson	Vinton	Xenophon 47766	Percheron
4916	F. L. Thompson	Van Horn	Mexicain 56784 (69148)	Percheron
4887	A. Simmons	Vinton	Trefnant King 9693 (24708)	Shire
4989	Fred Kieffer	Vinton	Sir Kone 01131	Trotter
5027	F. L. Thompson	Van Horn	Cambrinus 2757 (41128)	Belgian
5028	F. L. Thompson	Van Horn	Charmant 42065 (58403)	Percheron
5138	I. W. Van Nice	Belle Plaine	Al Alcott 50103	Trotter
5139	I. W. Van Nice	Belle Plaine	Cresceum 44726	Trotter
5144	J. C. Stewart et al	Newhall	Roosevelt 15265	French Draft
5354	M. D. Dodd	Belle Plaine	Don Aegon	Trotter
5355	L. H. Liebsch	Vinton	Walker 46104	Percheron
1172	F. C. Bobzien	Newhall	Beach Insurgent 6554 (Vol 24)	Shire

BLACK HAWK COUNTY

173	C. C. Hahn	Raymond	Faquin 22876 (43778)	Percheron
243	F. J. Schweer	Dunkerton	Captif (44891)	Percheron
221	Jas. Loonan	Waterloo	Bloomer 40589	Percheron
220	Jas. Loonan	Waterloo	Superior 40605	Percheron
182	G. W. Clark	Cedar Falls	Petronius 1249	German Coach
286	E. E. Sage	Waterloo	Gartner 113 (1409)	Oldenburg Coach
7	K. E. Penney	Cedar Falls	Airoo 31861	Trotter
478	W. D. Strayer	Waterloo	Magor 26953	Percheron
477	W. D. Strayer	Waterloo	Gabels Hopeful 5785 (18029)	Shire
618	C. F. Horse Importing Co.	Cedar Falls	Richard 8th 7574	Clydesdale
617	C. F. Horse Importing Co.	Cedar Falls	Coquet de Herck 1545 (25466)	Belgian
615	C. F. Horse Importing Co.	Cedar Falls	Headlight 5604	Shire
774	C. A. Hayzlett	La Porte City	Tommy Brown 5128	Morgan
1063	W. S. Brecunier	Waterloo	Mascot 2021	Shetland Pony
1038	O. A. Jensen	Dunkerton	Don Pedro 22092	Percheron
1014	Chas. & Ed Walter	Finchford	King Gothard 14218	French Draft
1129	Black Hawk Horse Co.	Waterloo	Colin 27082 (48364)	Percheron
1155	H. W. Miller	R. 1, Waterloo	EclipseD'Oplinter(12538)	Belgian
1416	C. E. Hearst	Cedar Falls	Gold Crown 10035	Clydesdale
1456	Henry Thompson	Cedar Falls	Keota Charming Gift 11160	Clydesdale
1581	Joseph Harn	Dunkerton	Regulateur 25027 (43441)	Percheron
1789	Jas. Loonan	Waterloo	Gilbert 43543	Percheron
1787	Jas. Loonan	Waterloo	Vanvert 41724	Percheron
1991	Wm. Crownover	Hudson	Flascoe 46220	Percheron
1990	Wm. Crownover	Hudson	Sound Currency 8639	Shire
1989	Wm. Crownover	Hudson	Matchless 8640	Shire
128	A. T. Kline	La Porte City	Toneham Laddie 5393 (17041)	Shire
2556	Wm. Blowers	Waterloo	Lord Finley 43576	Trotter
2557	Wm. Blowers	Waterloo	Velox R. 43574	Trotter
2558	Wm. Blowers	Waterloo	Latier F. 43575	Trotter
2559	Wm. Blowers	Waterloo	Axtello 26839	Trotter
2560	Wm. Blowers	Waterloo	Camden W. 36231	Trotter
2561	Wm. Blowers	Waterloo	Allertonian 36131	Trotter

BLACK HAWK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2900	M. J. Magee	Dunkerton	Marquis De Warelles 2244 (33608)	Belgian
3355	Nils Hansen & Sofus Larson	Hudson	Porcaro 15245	French Draft
3542	Jacob Hansen	Cedar Falls	Prince of Denmark 40817	Trotter
3740	Wm. Crownover	Hudson	Royal Buster 8641	Shire
3935	Louis Wickkleson	Cedar Falls	Welcome 47972	Percheron
4005	E. R. Douglass	Waterloo	Bolivien 42076 (63855)	Percheron
2474	M. T. Stiles	Cedar Falls	Duncan 20584	Percheron
4058	C. H. Blum	Cedar Falls	Black Hawk Prince 45640	Percheron
4061	S. R. Lampman	Cedar Falls	Utell 22850	Trotter
4042	H. A. Brinker	Waterloo	Monarch 51631	Percheron
3929	M. T. Stiles	Cedar Falls	Red Rob 44135	Trotter
4612	Wm. Crownover	Hudson	Dewster Pioneer 9831 (20128)	Shire
4613	Wm. Crownover	Hudson	Coombe Royalty 9838 (25811)	Shire
4614	Wm. Crownover	Hudson	Orange Pekoe 9833 (24509)	Shire
4615	Wm. Crownover	Hudson	Maywood Monarch 9832 (24433)	Shire
4516	Wm. Crownover	Hudson	Surveyor 9222 (24818)	Shire
4617	Wm. Crownover	Hudson	Holdenby Abbot 9835 (25813)	Shire
4618	Wm. Crownover	Hudson	Newton Dan 9129	Shire
4619	Wm. Crownover	Hudson	Bury Leader 9555	Shire
4620	Wm. Crownover	Hudson	Gazolite 55176 (69741)	Percheron
4622	Wm. Crownover	Hudson	Manillon 55178 (67182)	Percheron
4623	Wm. Crownover	Hudson	Gamin 55177 (70531)	Percheron
4784	A. Ruthenberg	Cedar Falls	Gresillon 55184 (71724)	Percheron
4838	Haring Bros.	La Porte City	Royal James II 9633 (23658)	Shire
4839	Sam Gillen	La Porte City	Staunch 9635 (24859)	Shire
4621	W. H. Stevens	La Porte City	Grevin 55182 (70790)	Percheron
4944	James Loonan	Waterloo	Cadix 56491	Percheron
4945	James Loonan	Waterloo	Hobson 51490	Percheron
4946	James Loonan	Waterloo	Vidoo 56497	Percheron
5031	Wm. Crownover	Hudson	Buscot Vortex 9834 (24111)	Shire
5032	Wm. Crownover	Hudson	Mandril 57009	Percheron
5170	G. W. Streeter	Cedar Falls	Lord Bingham 39768	Trotter
5212	M. T. Stiles	Cedar Falls	Journaliste 55462 (67192)	Percheron
5280	C. C. Hahn	Raymond	Philax 2519 (Vol. 12)	Belgian

BOONE COUNTY

190	J. B. Tremain	Boone	The Idol 36083	Trotter
202	W. B. Donelson	Ogden	Herode de Fosteau 1466 (25494)	Belgian
203	W. B. Donelson	Ogden	Boulet Gouy 1465 (25510)	Belgian
237	G. H. Zimbelman	Boone	Allertson 12862	Trotter
368	Geo. D. Muench	Ogden	Iowa Boy 9285	French Draft
433	J. R. Doran	Beaver	Charmante 14544	French Draft
434	J. R. Doran	Beaver	La Fayette 12050	French Draft
677	N. C. Petty	Pilot Mound	Fitch Dandruff Cure Boy 0901	Trotter
678	N. C. Petty	Pilot Mound	Villebon II 40668	Percheron
679	N. C. Petty	Pilot Mound	Bumper 1865	Belgian
811	S. S. Gilbreath	Pilot Mound	Count Shaw 43072	Trotter
1127	A. W. Williams	Pilot Mound	Keota Spurgeon 27696	Percheron
1470	E. D. Bryant	Madrid	Ostendo 1065 (21594)	Belgian
1492	E. D. Bryant	Madrid	Bismark 13298	French Draft
1547	J. E. Smith	Boone	Illustre 10237	French Draft
1602	Geo. F. & Theo. F. Freie	Ogden	Athos II (919)	Belgian
1617	R. H. Reynoldson	Madrid	Britian Yet 10113	Clydesdale
2112	Clinton McCaskey	Ogden	Flamand 1970 (Vol. 12, p. 555)	Belgian
2146	August Peterson	Madrid	Keota Sharp 27686	Percheron
2182	Geo. Freie	Ogden	Shiloh 46858	Percheron

BOONE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2225	Henry J. Lark	Ogden	Edelweise 14658	French Draft
2226	H. J. Lark	Ogden	Budweiser 14660	French Draft
2402	James Neild	Ogden	Colonel 12585	Clydesdale
2627	David Welsh	Boone	Delavan 20709	Percheron
2451	Dotlef Harten	Ogden	Derwent Menestrel 6962 (21334)	Shire
193	Husted Osterhandt	Boone	Sir Consul Jr. 28899	Trotter
2708	Husted Osterhandt	Boone	Major Beath 8350	French Draft
2804	Farmers' Draft Horse Co.	Boone	Congo (13468)	Belgian
2866	Geo. W. Colwell	Pilot Mound	Attila 8140 (35812)	French Draft
3301	Treloar Horse Co.	Ogden	Tirailleur 11533 (45113)	French Draft
2231	D. A. Bennett	Berkley	Pierre Le Blanc 43808	Percheron
3937	Neild Bros.	Ogden	Normal Tom 8117	Shire
3938	Neild Bros.	Ogden	Clayton 8862	Shire
3939	Nield Bros.	Ogden	Kruger 45446	Percheron
4237	Orlow Colwell	Berkley	Serail 51241 (56677)	Percheron
4501	J. A. Peterson	Pilot Mount	Royal Mambretta 43531	Trotter
4994	Geo. Freie	Boxholm	Bayard 2204	Belgian
5033	Healy Bros.	Boone	Acy 17272 (65480)	French Draft
4707	Geo. C. Durrell	Pilot Mound	Luron 56882 (65952)	Percheron
5240	O. E. Folk	Boone	Pactolus 9102	Trotter
5256	S. S. Gilbreath	Pilot Mound	Langlois 59174	Percheron
5271	Wm. Schall	Berkley	Regis 52414	Percheron

BREMER COUNTY

158	A. J. Schmit	Minkler	Roosevelt 10343	Clydesdale
159	B. B. Shroes	Janesville	Conquerant 32746 (44954)	Percheron
187	J. H. Carstensen	Tripoli	Carliste 581 (4198)	Belgian
188	J. H. Carstensen	Tripoli	Samson 32977	Percheron
735	George Leyh	Sumner	Marshall Lasnes 31059	Percheron
730	J. J. Lynes	Plainfield	Dude 4673	Morgan
1073	F. F. Lynes	Waverly	Keota Barnum 20646	Percheron
1390	C. H. Baskin	Waverly	Robert 26944 (46848)	Percheron
1391	C. H. Baskin	Waverly	Pomard 21275 (43229)	Percheron
1389	C. H. Baskin	Waverly	King William 11524	Clydesdale
2139	Eugene White	Plainfield	Charleagno 25888	Percheron
2515	Percheron Horse Co.	Waverly	Mirliton 46055 (57209)	Percheron
3217	F. H. Baskins	Janesville	Lord Aberdeen 12970	Clydesdale
3691	J. J. Lynes	Plainfield	Dart 5130	Morgan
3965	Jennings Bros	Janesville	Raley 49418	Percheron
4064	J. W. Teightmeier	Sumner	Charmant (Vol. XI)	Belgian
211	J. W. Teightmeier	Sumner	Beau-Rivage (6022)	French Draft
4261	F. H. Baskins	Janesville	Royal Sady II 12968	Clydesdale
4413	Bert Fry	Plainfield	Sans Peur 2228	French Coach
4414	Bert Fry	Plainfield	Admiral Dewey 3288	Shetland Pony
4580	Verne Pierce	Plainfield	Visco 30521	Trotter
5084	J. J. Lynes	Plainfield	Herr Woodford 34439	Trotter
5245	Chas. Hemmings	Waverly	Treilleur 17278 (64166)	French Draft
5246	J. J. Lynes	Plainfield	Franklin 8180 3989	Trotter and Morgan

BUCHANAN COUNTY

363	P. H. Fockler	Independence	Fairfield Buster 7833	Shire
362	P. H. Fockler	Independence	Nig 17816	Percheron
361	P. H. Fockler	Independence	Monarch 5684	Shire
360	P. H. Fockler	Independence	Royal 35357	Percheron
381	D. J. Sensor	Hazleton	Avon A. 40917	Trotter
387	Jas. Netcott	Independence	Red Reaper 39280	Trotter
151	W. H. Miller	Independence	Fusain 42837 (56304)	Percheron
208	W. M. Molyneaux	Independence	King Greenlander 33775	Trotter
483	Peter Schuster	Jesup	Frivole 31448 (48512)	Percheron
1013	Rowley Draft Horse Co.	Rowley	Archer 28748 (45436)	Percheron
1060	B. E. Robinson	R. 3, Rowley	Drafty Bill 26372	Percheron

BUCHANAN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1315	L. B. Young	Independence	King Bow Bells 34231	Trotter
1316	L. B. Young	Independence	Reveur 10718	French Draft
1592	E. W. Chessmore & M. P. Kepford	Independence	Victor 11222	French Draft
1768	Fred Retz	Lamont	Ocean 21272 (42903)	Percheron
1820	Geo. B. Winegar	Brandon	Donnell 46107	Percheron
1976	C. H. Jakway	Aurora	Newton J. 41382	Trotter
2228	Aurora Percheron Horse Co.	Aurora	Lepanto 41657 (47428)	Percheron
616	J. J. McBride	Winthrop	Lion de Loncin 1542 (25464)	French Draft
3004	A. J. Drake	Hazleton	Darling 41620	Percheron
3020	Winthrop Horse Co.	Winthrop	Marengo 24467 (44400)	Percheron
3352	A. C. Whitcher	Hazleton	Pomard 31444 (45243)	Percheron
3425	A. D. Smith & A. J. Silke	Hazleton	Catalan 16798 (34304)	Percheron
3505	Clarence Wardell	Hazleton	Bob 12473	French Draft
4053	Jas. J. McBride	Winthrop	Enjoue 52365 (62296)	Percheron
2479	J. W. Elliott	Brandon	Remour II 45627	Percheron
3723	John D. Mahoney	Stanley	Mikado 2698 (41748)	Belgian
4914	Chas. Prangly	Jesup	Advance 41592	Percheron
5162	G. H. French	Independence	Valegrin 42722 (53869)	Percheron
5163	G. H. French	Independence	Paimpolais 49250 (47644)	Percheron
5185	Adam Kieffer	Hazleton	Monteur 41469 (54235)	Percheron
5307	G. H. French	Independence	Paimpolias II 43539	Percheron

BUENA VISTA COUNTY

1	C. E. Cameron	Alta	Look Sir 31562	Trotter
4	J. E. Rudolph	Marathon	Zalfo 34092	Trotter
24	Jas. M. Hoskius	Sioux Rapids	Ole Oleson 35603	Trotter
25	Jas. M. Hoskins	Sioux Rapids	Billy Lee 43177	Trotter
219	Holmes & Kennedy	Alta	Soprano 40393 (45063)	Percheron
201	Bradford & Seeth	Rembrandt	Brutus 21457 (43203)	Percheron
642	J. A. Chindlund	R. No. 3, Alta	Sabinus 13093 (25670)	Percheron
951	Elk Percheron Horse Co.	Alta	Parmentier 32401 (45668)	Percheron
1083	J. M. Haywood	Alta	Satan 1813 (25282)	Belgian
1010	Linn Grove Horse Co.	Linn Grove	Moblot 29499	Percheron
894	David Snyder	Sioux Rapids	Ambassador 5034	Shire
1219	Storm Lake Percheron Horse Co.	Storm Lake	Muscle 34299 (46359)	Percheron
1252	M. Mulvihill, Sr.	Newell	Dewette 26885	Percheron
1261	N. M. Layman	Newell	French Monarch 9353	French Draft
1262	N. M. Layman	Newell	Allside Prince 5621	Shire
1759	Carl P. Hoeg	Newell	Diamond 43300	Percheron
1992	J. T. Norton	Marathon	Zaffre 37099	Trotter
2037	Wm. Woods	Newell	Duke II X 5934 (18689)	Percheron
2196	E. E. Holmes	Marathon	Pompon Jr. 45197	Percheron
2363	Len H. Lamar	Storm Lake	3d Jeweled Prince 10881	Clydesdale
2692	Marathon Shire Horse Co.	Marathon	Gabels Coeur-de-Lion 6961 (Vol. 25)	Shire
2715	Geo. Kestell	Storm Lake	Munger 23794	Percheron
2784	Hayes Shire Horse Co.	Storm Lake	Highland Hero 4940	Shire
3	B. Fultz	Storm Lake	McCaskle 6820	Clydesdale
3538	Webb Coach Horse Co.	Marathon	Samton de Goyer 1275 (17032)	Belgian
3559	Geo. D. Anderson	Newell	Prince Newell 45579	Trotter
3653	H. F. Wellmerling	Rembrandt	Procter 12631	French Draft
4236	J. J. Richardson	Alta	Westonian 41552	Trotter
4551	J. J. Hughes	Storm Lake	Wild Cherrie 14223	French Draft
4552	Hans Hadenfeldt	Storm Lake	Up-To-Date Armour 9243 (24815)	Shire
4563	Len H. Lamar	Storm Lake	Royal Connaught 768	Hackney
4564	F. N. Buckingham	Alta	Alphand II 49426	Percheron

BUENA VISTA COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4852	Mrs. Emma Hoffman	Storm Lake	Captain Black 5236	Morgan
4863	Leon Hurless	Storm Lake	Guibray 42747 (70021)	Percheron
4900	Sanfrid Lundgren	Marathon	Hixon Blaze 6095 (18804)	Shire
4964	Louis Lauridson	Newell	Zit 8682 (23934)	Shire
4965	Carl P. Hoeg	Newell	Condor 3261 (45620)	Belgian
2923	A. E. Sweet	Storm Lake	Baptiste 28163 (47052)	Percheron
3358	Belgian Horse Co.	Storm Lake	Ovation 1446 (25314)	Belgian

BUTLER COUNTY

247	T. J. Watterson	Aredale	Bourdon 7314 (1458)	French Draft
236	Colin Horse Co.	Austinville	Colin 29946 (48454)	Percheron
548	W. J. Feltus	Allison	Prince Perche 20951	Percheron
366	H. C. Miller	Bristow	Major McKinley 826	Belgian
1084	R. W. Webster	Allison	Brown King 26359	Percheron
1072	F. W. Bucholz	Clarksville	Keota Henry 31900	Percheron
1064	Miller & Rogers	Allison	Alcibiade 15877 (22819)	Percheron
1186	Burt Curtis	Allison	Keota Rambler 27652	Percheron
1359	J. Nevins	Greene	Dude Jr. 43448	Trotter
1827	H. F. Stanton	Greene	Drum Major 25830	Percheron
2332	Chas. & Wm. Tell	Clarksville	Pierre de Pieton 1988 (29746)	Belgian
2413	John Metcalf	Allison	Pompedour 900	Belgian
659	Wedeking Bros. & Co.	Clarksville	Dewey 24585	Percheron
918	M. H. Barnes	Dumont	Guidon (34246)	Belgian
2942	Beaver Grove Horse Co.	New Hartford	Grandee 23212	Percheron
2841	Martin & Burroughs	Clarksville	Romeo II 12551	Clydesdale
3244	M. H. Barnes	Dumont	Sherwin 20975	Trotter
3510	H. A. Boyd	Clarksville	King Kiosk 42251	Trotter
3643	C. A. Iblings	Parkersburg	Onix Vol. 7	Oldenburg Coach
3940	Geo. O'Brien	Greene	Warren Miles 43221	Trotter
4071	Walter C. Walker	New Hartford	Abilly 51339 (65592)	Percheron
3677	O. J. Early	Bristow	Idol B. 35581	Trotter
494	R. M. Skillen	Greene	Admiral Dewey 6241	Shire
3685	Wm. Marlow	Greene	Vyzenio 34685	Trotter
4506	H. M. Bunker & Sons	Bristow	Governor Swarts 34545	Trotter
3958	James Walsh	Bristow	Prince Romeo's Heir 12219	Clydesdale
977	Ira Ingraham	Greene	Taupin 10704	French Draft
4575	Ira Ingraham	Greene	Conde 12292	French Draft
4583	Henke Bros.	Aredale	Shelley 11670	French Draft
4876	John Metcalf	Allison	Cornil 3398 (46044)	Belgian
4875	John Metcalf	Allison	Farceur 51117 (68357)	Percheron
4709	M. H. Barnes	Dumont	Garisal 56789 (71595)	Percheron
4947	J. A. Bell	Allison	Allison Lad 10286	Shire
4986	H. Converse	New Hartford	Cashier 49837	Percheron
5023	Isaac Ackerson	New Hartford	Ravachel 44100 (48785)	Percheron
4143	C. R. Bragg & D. W. Walker	Greene	Lafaette 43797	Percheron
2690	C. R. Bragg & D.			
3391	J. W. Hickle	Greene	Quivit 2431 (36386)	Belgian
	W. Walker	Clarksville	Directum Centlivre 45440	Trotter

CALHOUN COUNTY

98	J. M. Baker	Jolley	Moustache 24572 (43576)	Percheron
160	Rockwell City Horse Co.	Rockwell City	Monaco 26908	Percheron
261	J. B. Richards	Rockwell City	Baron Lee 36549	Trotter
54	Gingerich & Petrie	Manson	Butor (46127)	Percheron
37	J. M. Baker	Jolley	Rutland Prince 6223	Shire
85	Yetter Belgian Horse Co.	Yetter	Charles Quint 18192	Belgian
411	J. W. Lockie	Pomeroy	Allerce 35459	Trotter

CALHOUN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
915	W. H. Kent	Manson	Brown Ben 6249	Shire
1021	John Baughmen	Manson	St. Laurent 13509	French Draft
1022	Elsen Bros.	Manson	Mouvement 25593 (44687)	Percheron
1023	Weise & Co.	Manson	Mouton D' Heure 1096 (21096)	Belgian
963	A. A. Wells	Somers	Colonel Berry 33720	Trotter
962	A. A. Wells	Somers	Tic Tac 28141 (44773)	Percheron
1176	J. H. Lish	Manson	Dr. Dunkle 40620	Trotter
1179	L. E. Pierce	Rockwell City	Marmotte 26142 (44018)	Percheron
1212	W. Q. Stewart	Rockwell City	Rockwell Boy 41851	Trotter
1436	A. F. Ramthun	Rockwell City	Dogue 43910 (60856)	Percheron
1511	E. S. Carmean	Lake City	Surprise 25300	Percheron
1648	Pomeroy Horse Co.	Pomeroy	Citadin (48476)	Percheron
1649	John Doyle	Pomeroy	Custine 6587 (9970)	Percheron
1753	O. H. Snyder	Manson	Black Reaper 43314	Percheron
1754	O. H. Snyder	Manson	Victor 24008 (44560)	Percheron
1779	Knierim Belgian Horse Co.	Knierim	Daniel 1182 (17830)	Belgian
2124	A. M. Pierce	Rockwell City	Dauphin 2346 (30648)	Belgian
2385	J. H. Hildreth	Rockwell City	Bedwell Tom 8435 (22102)	Shire
2511	J. W. Brayton	Rockwell City	Lake City Matchless 7288	Shire
2517	Lake City Percheron Horse Co	Lake City	Emery 33740 (46207)	Percheron
2539	F. W. Arney	Lake City	Prince Model 44268	Percheron
2541	F. W. Arney	Lake City	Scarabe's Model 43701	Percheron
2542	F. W. Arney	Lake City	Togo 44270	Percheron
2855	Hutchinson & Jacobs Lake City Horse Co.	Lake City	Tacticien 2481	French Coach
2887	J. E. Barr & Wm. Winkleman	Lohrville	Pepin De Leernes 1756 (21650)	Belgian
2906	W. D. Pittman	Lake City	Mahomet Royalist 4861	Shire
2905	W. D. Pittman	Lake City	Eden Chief 8712 (19530)	Shire
2904	W. D. Pittman	Lake City	Mahomet Boaz 4928	Shire
1020	Nordhausen & Schmidt	Manson	Waterloo 12661	French Draft
3229	George Moss & Cain & Son	Lohrville	Llynelys Ladd 7098 (17450)	Shire
3299	C. W. Titus & Son	Yetter	Pink Major 43927	Percheron
3468	Smiley Francis	Jolley	Colonel 32306 (44313)	Percheron
3469	Smiley Francis	Jolley	Keota Sorrento 27693	Percheron
3614	John Knoke & Geo. Baskervell	Knoke	Bristol de Lange 2514 (32962)	Belgian
4062	John Doan	Rockwell City	Black Frenchman 1164	French Draft
4083	J. W. Brayton	Rockwell City	Diaz 45550	Percheron
4241	Lent & Petrie	Manson	Saxwood 31794	Trotter
4288	H. G. Fillenworth	Rockwell City	Doctor Sennett 25423	Trotter
4303	Garrett & Hudson	Lohrville	Major III 45591	Percheron
2743	J. P. Hammond	Jolley	Regent 27845 (43562)	Percheron
4574	S. McCloud	Lohrville	Togo the Second 54803	Percheron
1175	O. G. Calmer	Manson	Ponca Van 39834	Trotter
2540	J. F. Benkendorf	Lake City	Tom Ton 44269	Percheron
4925	John F. Hammen	Jolley	Prince 17056	French Draft
5024	W. H. Hudson	Lake City	Lohrville Prince 6032	Shire
5046	W. D. Pittman	Lake City	Credit 51529 (68529)	Percheron
5047	W. D. Pittman	Lake City	Raydon Guardsman 9728 (25803)	Shire
3661	J. O. Smithers	Lohrville	Boaz II 9909	Shire
5091	John Doan	Rockwell City	Aramis 51823 (64662)	Percheron
5121	Will R. King	Manson	Foxy Duncan 47012	Trotter
2372	Joseph Barber	Rockwell City	Dragon 50588 (70398)	Percheron

CARROLL COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
32	J. Coder	Glidden	Red Wallace 22369	Trotter
29	Henry Torpy	Manning	Brilliant 1849	Belgian
810	Jos. Wilson	Manning	Bolibar 19335	Percheron
1245	Wm. Heuton	Glidden	Tobe II 746	French Draft
1246	Wm. Heuton	Glidden	Docelle 17414	Percheron
1562	Julian Township Horse Co.	Coon Rapids	Hercule De Courtrai 1439 (25364)	Belgian
1639	Wm. Rupiper	Carroll	Malborough 830 (13010)	Belgian
1690	Henry George	Coon Rapids	What You Want Jr 29165	Percheron
1695	L W. Schumacher	Carroll	La Fleur 10900	French Draft
65	Wm. Wiese	Manning	Diomede 18518	Percheron
2227	Herman F. Von Glan	Breda	Grison (28932)	Belgian
2661	A. Kessler	Carroll	Moltka 39075	Trotter
2684	Hy Dammann	Manning	Coriza 41830 (56193)	Percheron
2446	A. E. Bolton	Glidden	Regent II 10843	French Draft
2543	H. E. Brown	Coon Rapids	Bertrand 12582	Percheron
2741	Lefingwell Horse Co.	Glidden	Cedar 27303 (45840)	Percheron
2798	R. S. Keat	Manning	Faro de Rotheaux 2428 (Vol. 12, p. 484)	Belgian
2799	D. P. Copp	Carroll	Carnot (13561)	Percheron
1466	Mike Fritz	Arcadia	Grandini 21988 (42783)	Percheron
2869	T. M. Campbell	Coon Rapids	Nobility 231	Suffolk
2903	Manning Norman Horse Co.	Manning	Conqueror 9107	French Draft
3308	C. H. Johnson	Glidden	Demus 43616	Percheron
3307	Glidden Horse Co.	Glidden	Chapeau 31437 (48688)	Percheron
3518	John H. Ginn	Glidden	Benour 21956	Trotter
2171	David Ferguson	Carroll	Porus 11943 (5979)	French Draft
330	Henry Moeller	Manning	Allison 20290	Percheron
4054	Stork & Vonnahme	Breda	Rattler Yet 10810	Clydesdale
2877	Roscoe Bros	Carroll	Riposteur 27422 (44782)	Percheron
4242	W. J. Johnston	Coon Rapids	Juneau 21142	Percheron
4253	Eischeid & Potthoff	Halbur	Sultan 47715	Percheron
4387	J. H. Kohorst	Acadia	Claudius 27617	Percheron
4027	Pasco Bros.	Carroll	Western Lad 9248 (24187)	Shire
4687	Marion Calder	Coon Rapids	Idole 3418 (43408)	Belgian
4906	E. E. Handley	Maple River	Lyceen 49201	Percheron
3639	A. Kessler	Carroll	Captain Trotter 44577	Trotter
4903	L. C. Shepard	Manning	Charmour 3378 (Vol. 15)	Belgian
5036	Dudley & Pretyman	Coon Rapids	Huhm 52043	Percheron
5053	J. H. Kohorst	Arcadia	Garibaldi 57406 (73137)	Percheron
2809	D. A. Rohan	Carroll	Croquemitaine (52402)	Percheron
5376	C. Steefes	Templeton	Serpentin 42424 (69063)	Percheron

CASS COUNTY

520	A. P. Cuykendall	Atlantic	Westside Referee 250	Suffolk
224	Caledonia Shire Horse Co.	Griswold	Stuntney Zephyr 8366 (22841)	Shire
241	J. H. Schofield & Oliver Manison	Griswold	Colosse 12458	French Draft
272	J. P. Brunner	Griswold	Rex 1591 (1618)	German Coach
284	Alex Dallas	Atlantic	Peter Kane 36969	Trotter
583	R. A. Berry	Atlantic	Knottinglet Referee (22501)	Shire
651	Turner Bros	Griswold	Prince B. 10731	Clydesdale
650	Turner Bros	Griswold	Major P. 11233	Clydesdale
608	Perry Woods	Marne	Green Mountain Boy	Morgan
607	Perry Woods	Marne	Banqueter 38881	Trotter
412	Anita Horse Co.	Anita	Merrimac 11952	Clydesdale
766	J. A. Nelson	Atlantic	Lucnonnais 40874 (55255)	Percheron
739	Geo. C. Lindeman	Lewis	Banker Boy 21153	Percheron
831	Ray McClintock	Griswold	Archie Greenlander 38704	Trotter

CASS COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1062	E. D. Ruff	Atlantic	Pat King 35906	Trotter
878	Fred Lassen	Atlantic	Captaine (51649)	Percheron
1156	G. E. McDermott	Anita	Napoleon Boy 45204	Percheron
1215	J. F. Gissibl	Anita	Defender's Best 11646	Clydesdale
1214	Alfred Bailey	Anita	The Master of Stair 11607	Clydesdale
1213	Alfred Bailey	Anita	Laird of Anita 12157	Clydesdale
1229	Wm. Hopley	Atlantic	Orlando (20785)	Shire
1396	Peter Biggs	Anita	Plough Boy II 5135	Shire
1423	Watt Devore	Massena	Luzignan 21778 (43899)	Percheron
1538	W. B. Berry	Atlantic	Stuntney Blake II 6652 (20061)	Shire
1597	F. H. & M. O. Trailer	Marne	Northolme Gipsey King 8197 (22639)	Shire
2101	Caledonia Belgian Horse Co.	Griswold	Tudor II 2572 (29482)	Belgian
2298	Geo. Smith	Atlantic	Beecher 14292	French Draft
2444	E. F. Moon	Atlantic	Young Hylas 43703	Trotter
2449	Frank Ruchs	Massena	Julius 2529 (33670)	Belgian
2582	H. C. Wohlenhaus	Griswold	Bouvois 41876	Percheron
2698	Otto Lassen	Cumberland	Roy 7859	Shire
2718	Cheney & Bell	Massena	Montekuma 34968	Trotter
2720	Cheney & Bell	Massena	Herault 14972	French Draft
2771	V. B. Mayberry	Atlantic	Leloir 41835 (54790)	Percheron
2781	Wm. Toepfer	Atlantic	Patriote 27823 (44454)	Percheron
697	Colwell & Brown	Atlantic	Bishop Jr. 38199	Trotter
1149	James Duncan	Atlantic	Duke of Creston 10949	French Draft
2984	Gene Pierce	Cumberland	Oriola 1567	German Coach
3109	Peter Hopley & Son	Lewis	Janus 3899	German Coach
3106	A. R. Brown	Anita	Baba 41824 (60746)	Percheron
3224	Wilson Bros.	Anita	Prince Kirtlebridge 9221	Clydesdale
3246	Fred Steinke	Atlantic	Prince L. 2606	Shetland Pony
3452	G. J. Pellett	Atlantic	Noxall R. 0565	Trotter
3640	M. O. Trailer	Marne	Harold Melrose 15274	Thoroughbred
3642	W. M. Burnside	Lewis	Lumps 27290	Trotter
3862	M. A. Bell	Atlantic	Leslie Farghar 42555	Trotter
1274	W. H. Mauk	Lewis	Greviste 30617 (43717)	Percheron
4273	A. Caywood	Cumberland	Gay 20787	Percheron
2721	E. A. Taylor	Anita	Orlando 42842	Percheron
4319	G. E. Eshelman	Griswold	Stuntney Royal Don 5748	Shire
2697	Metz Bros.	Anita	Piston 2414 (37398)	Belgian
2725	Hansen Bros.	Anita	Happy Thought 11761	Clydesdale
1181	H. G. Highley	Anita	Moulton Sir Peter (22957)	Shire
4511	John Caywood	Cumberland	Roubigne 14877	French Draft
1781	Pouder & Wilcox	Griswold	Joe Bailey 8003	Shire
179	John F. Spies	Wiota	Westside Sultan 230	Suffolk
4777	H. M. Baker	Atlantic	Hudson's Bay 5638	Morgan
4287	J. P. Chandler	Cumberland	Hugh Vincent 9737	Shire
4050	J. P. Chandler	Cumberland	Major 52501	Percheron
4930	Wm. Toepfer	Atlantic	Tivoli 42657 (66717)	Percheron
4939	Hansen Bros.	Anita	Plumy Boy 13003	Clydesdale
4967	V. B. Mayberry	Atlantic	Titus 42786 (60389)	Percheron
6005	C. M. Hughes	Griswold	Montmorency 51328	Percheron
3499	J. E. Jewett	Anita	Cap Vincent 9065	Shire
5014	Frank Ruch & Z. Scott	Massena	Gardon 56781 (72165)	Percheron
5043	J. F. Gissibl	Anita	Greathill Chief 13809	Clydesdale
348	Frank Folly	Wiota	Ciceron 31105 (46917)	Percheron
5236	Lindeman & Frank	Lewis	Gayroche 55257 (71039)	Percheron
395	Wilson Bros.	Anita	Nonpariel 23034	Percheron
738	Wohlenhous & Pouder	Griswold	Black Prince 21415	Percheron
4272	Frank & Chas. Kilpatrick	Cumberland	Buffalo Bill 2406 (37402)	Belgian

CEDAR COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
390	Wm. Gray	Mechanicsville	Sandscale Mafeking 7111 (19100)	Shire
391	Wm. Gray	Mechanicsville	I. D. 36221	Trotter
218	Downey Draft Horse Co.	Downey	Negrillon 26105 (54340)	Percheron
323	F. M. Emerson	Clarence	King Richard 5975	Shire
563	F. W. Eilers	Tipton	Jim Corbet Jr. 7387	Shire
720	J. J. Jackson	Mechanicsville	Howard Black 38488	Trotter
857	Jno. Willer, Jr	Tipton	Tipton Major 5454	Shire
832	Sam McAfee	Mechanicsville	Delamere Combination 7357 (1672)	Shire
870	C. E. Kohl	Mechanicsville	Horbling Field Marshal 7112 (18814)	Shire
1162	Glen Linden Shire Horse Co.	Stanwood	Blaisdon Vulcan 7113 (18529)	Shire
1217	B. Kook	Durant	Pleasant Hill King 26380	Percheron
1218	B. Kook	Durant	Albert 32350 (48457)	Percheron
1233	Rustique Horse Co.	Stanwood	Rustique 27152 (48366)	Percheron
1491	Leander Horse Co	West Branch	Leander 12450	French Draft
1478	Chas. Mason	Tipton	Cephas 10771	Trotter
2166	A. J. Glick	Clarence	Glick's Plunger 41589	Percheron
2179	O. R. Glick	Clarence	Auctioneer 30234	Percheron
2975	C. L. & C. D. Peck	Mechanicsville	Winton Duke 2975	Shire
4302	L. P. Yocum & Son	Clarence	Red Amber 44098	Trotter
4347	Downey Draft Horse Co.	Downey	Sebatier 50766 (64448)	Percheron
4365	Chas. W. De Camp	Tipton	Taylor the Great 47101	Trotter
4475	Willer & Hambright	Tipton	Joliet Wolf 9280 (24825)	Shire
3135	John Secord	Mechanicsville	Billy J. Bryan 15702	French Draft
4657	Geo. H. Preston & P. H. Moylan	West Branch	Gervais 51886 (72644)	Percheron
3324	C. L. McClellan	Lowden	Farceur 9247 (6426)	Percheron
3323	C. L. McClellan	Lowden	Bright Gamaleon 44187	Trotter
3314	W. S. Spears	Stanwood	Farmers' Profit 7106	Shire
3396	Fred Schmidt	Clarence	Sergent 27189 (44292)	Percheron
3395	Mechanicsville Percheron Horse Company	Mechanicsville	Clemenceau 31247 (48713)	Percheron
3668	H. S. Hoyman & Son	Stanwood	Acolyte 41375 (54915)	Percheron
3683	Duane Rugby	Mechanicsville	Tipton 41117	Percheron
5004	Harris, Blair & Loehr	Bennett	Jou Jou 56720 (69055)	Percheron
545	H. A. Small	West Branch	Maple Dick 12917	French Draft
3136	C. O. Gray	West Branch	Old Tar 15701	French Draft
5171	Will Werling	Clarence	Solide 59161	Percheron
5315	Moore Bros.	Tipton	Selim 53844	Percheron

CERRO GORDO COUNTY

578	C. H. Merchant	Mason City	Sir George 2736	Shire
579	C. H. Merchant	Mason City	Victor M. 8386	Shire
580	C. H. Merchant	Mason City	Maxmillion 7744	Shire
690	Neils Brown	Thornton	Caesar 27831 (48382)	Percheron
1580	A. M. Avery	Mason City	Abe Lincoln 8400	Shire
1627	P. Murphy	Dougherty	Beauregard 40407	Percheron
1646	James Ferrier	Mason City	Pipestone Bill 41406	Percheron
1679	Wetter, Latimer, Crotty Horse Co.	Rockwell	Bolero 40391 (56734)	Percheron
1756	C. Bryant	Mason City	Connaught 2779	Shire
2286	L. G. Parker	Mason City	Rex 50294	Percheron
2287	L. G. Parker	Mason City	Rouser 35826	Percheron
2313	Robt. Carr	Mason City	Robert Patch 41405	Trotter
2314	Robt. Carr	Mason City	Barondean 36317	Trotter
2415	L. G. Parker	Mason City	Peer 40418	Percheron

CERRO GORDO COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2830	Rockwell Horse Co.	Rockwell	Clos Vougeot 2203 (33310)	Belgian
1235	T. B. Morse	Rock Falls	Keota Narragansett (31881)	Percheron
3094	Paul Bros.	Thornton	Calei O. 42180	Trotter
3093	August Hanson & Paul Bros.	Thornton	Renouveau 1063 (21582)	Belgian
3337	C. M. Baker	Mason City	Frank 9523	French Draft
3335	Van Note Bros	Mason City	Armour 42035	Percheron
3334	Van Note Bros	Mason City	Buster Brown 41364	Percheron
3672	T. M. Dresbach	Mason City	Reno 48783	Percheron
4118	Fred Ebanit	Meservy	Mountain 40688	Percheron
4246	Mason City Burchinal & Rockwell Belgian Horse Co.	Rockwell	Cognac de Bovesse 1451 (25332)	Belgian
4383	Grant McGowan	Mason City	Decided 30182	Percheron
4384	Grant McGowan	Mason City	Win 51627	Percheron
4385	Grant McGowan	Mason City	Right 51626	Percheron
4386	Grant McGowan	Mason City	Prize 51625	Percheron
782	Bennett Hayes	Clear Lake	Prince Climax 9807	Clydesdale
4678	Lee & Geo. Lewis	Thornton	Chilperic 51926 (62732)	Percheron
5041	P. H. Murphy	Dougherty	Francais 58910 (61883)	Percheron
632	L. M. Leamon	Mason City	Oki (Vol. 7)	Oldenburg Coach

CHEROKEE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
157	J. J. Richardson	Marcus	Bloc 24705	Percheron
1819	F. W. & C. E. Peck	Cherokee	Sultan 44330 (56244)	Percheron
2143	F. F. Lowell	Larrabee	Baccarat 20398	Percheron
2168	Maple Valley Belgian Horse Co.	Aurella	Marquis de Wytschacte 482 (25416)	Belgian
2191	C. P. Spinharney	Cherokee	Moquart 1352 (16790)	Belgian
2192	C. P. Spinharney	Cherokee	Polo 44135 (51875)	Percheron
2194	John Soukup	Marcus	Cadet de Mouchon 1750 (23852)	Belgian
2197	W. J. Dawson	Washta	Pichegru 13035 (51163)P.	French Draft
2404	W. P. Green	Washta	Farmers Profit 27915	Percheron
2551	G. W. Harrison	Washta	Walpole 24554	Trotter
2552	G. W. Harrison	Washta	Mongout 27375 (44592)	Percheron
2783	T. E. Linton	Aurelia	Branchwood 24164	Trotter
2796	L. H. Ducommun	Cleghorn	Brilliant List 47328	Percheron
2963	J. A. Kelly	Larrabee	Malmaison 41864	Percheron
3005	Geo. Hirschman	Marcus	Saphir 32834 (46498)	Percheron
3006	Fred Furkly	Marcus	Corbon 33056	Percheron
3007	E. V. Ferrin	Marcus	Gold Bug 21127	Percheron
3105	Cleghorn Horse Co.	Cleghorn	Cambodge 29492 (44914)	Percheron
3114	W. P. Green	Washta	Chalet 40672 (55519)	Percheron
3558	P. L. Draper	Larrabee	Carnaval 2107 (29872)	Belgian
3637	Geo. Bower	Cherokee	Sans-Facon 32333 (46882)	Percheron
4043	S. G. Dawson	Washta	Sandy 46213	Percheron
4291	G. W. Brown	Marcus	Mouton 46707	Percheron
4265	L. M. Miller	Marcus	Tassin 33850 (45149)	Percheron
4131	A. A. Goodburn	Marcus	Almond 25317	Percheron
4149	Geo. Lockwood	Cherokee	Major B. 48091	Percheron
118	John Stemple	Cherokee	Fashion 1084	French Coach

CHICKASAW COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
487	F. P. Shekleton	Lawler	Matchless McKinley 11798	Clydesdale
486	F. P. Shekleton	Lawler	John Lawler 11797	Clydesdale
485	F. P. Shekleton	Lawler	Newton Masher 7654	Shire
484	F. P. Shekleton	Lawler	Rockwell 19843	Percheron

CHICKASAW COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
576	W. S. Thorn	Fredericksburg	Faro 33136	Percheron
94	Gilbert Touney	Lawler	Roy Benton 8368	Shire
108	W. B. Porter	New Hampton	Boyer 10522	Trotter
283	North Washington Horse Co.	No. Washington	Tiflis 23227 (41397)	Percheron
2	L. C. Goodsell	Nashua	Sesostris 27871 (43661)	Percheron
426	Bassett Percheron Horse Co.	New Hampton	Rejoni 45011	Percheron
629	X. F. Mishak	Ionia	Farmer 10119	Clydesdale
757	P. M. Smith	Ionia	King 12856	Percheron
719	Smith Bros.	Fredericksburg	Sherman 22339	Percheron
914	J. F. Cagley	Nashua	Billy M. 5113	Morgan
1080	Dan Hickok	Ionia	Ralock 43241	Trotter
1088	M. B. Farr	Nashua	Obus 27803 (43548)	Percheron
1046	Alex Shekleton	Lawler	Cedric MacNeil 10049	Clydesdale
1257	New Hampton Belgian Horse Co.	New Hampton	Beduoin 1256 (23802)	Belgian
1224	Mike Whalen	Jerico	Lapin (58301)	Percheron
1225	Mike Whalen	Jerico	Bangala 856 (11890)	Belgian
1399	S. A. Shekleton	Lawler	Sable Prince 11300	Clydesdale
1378	C. F. McNevin	Lawler	Rob McNevins 34289	Trotter
2219	Otto Koerth	Ionia	Russell Ago 44463	Trotter
1498	F. P. Shekleton	Lawler	Wm. McKinley 12372	Clydesdale
1499	F. P. Shekleton	Lawler	Black Major II 45437	Percheron
1734	X. F. Mishak	Ionia	Francois II 40111	Percheron
1750	Frank Leightman	New Hampton	Gamzoo 34363	Trotter
1837	James Ramsey	Lawler	Silver Royal 43539	Trotter
2237	F. P. Shekleton	Lawler	Robin Rant 14645	French Draft
2236	F. P. Shekleton	Lawler	De Soto 47227	Percheron
2265	X. F. Mishak	Ionia	Fleuris 14845 (61659)P	French Draft
2782	J. T. Huffman	Ionia	Nedrow 41809	Percheron
2838	Jno. Clemens & Co.	New Hampton	Ray Westfall 9651	Clydesdale
2902	Thos. H. Smith	Lawler	Mac Niven 8655	Clydesdale
3129	S. E. Johnson	New Hampton	Clapet 11050	Percheron
3143	F. P. Shekleton	Lawler	Prince Discoverer 9746	Clydesdale
3142	F. P. Shekleton	Lawler	Crouse 47105	Percheron
3141	F. P. Shekleton	Lawler	Quarius 43267	Percheron
3190	L. B. Scales	Nashua	Donshaw 35979	Trotter
3194	R. W. Donovan	Lawler	Billy Bryan 13135	Clydesdale
3210	J. R. Whitcomb	Fredericksburg	D'Aplomb 21604 (43071)	Percheron
3282	Frank P. Shekleton	Lawler	Baron Doune 12613 (13254)	Clydesdale
1947	Peter Birgen	New Hampton	Aristide 50502 (64237)	Percheron
3464	J. R. Hickok	Ionia	Coran 2344 (32554)	Belgian
3570	C. E. Sullivan	Fredericksburg	Cecil Twig 42112	Trotter
360	J. W. Pierce	Republic	Conway Albert 923	Belgian
3602	J. W. Pierce	Republic	Vigeroux 41168	Percheron
3663	Frank P. Shekleton	Lawler	Barney's Chief 10848	Clydesdale
1936	Alta Vista Draft Horse Improvement Co.	Alta Vista	Pothuau 50548 (62463)	Percheron
4087	X. F. Mishak	Ionia	Der Captain 4645	German Coach
1305	J. T. Huffman	Ionia	Prince Hilton 40795	Percheron
1898	Peter Birgen	New Hampton	Turner (2155)	Holstein Coach
4230	Fredericksburg Shire Horse Co.	Fredericksburg	Kendal Budgeon 6514 (Vol. 24)	Shire
1689	F. P. Wentz	New Hampton	Trojan 31389	Percheron
4489	Miller & Kenyon	New Hampton	Mark Del 24914	Trotter
3545	Wm. DeBettignies	New Hampton	Sethos 24754 (43657)	Percheron
4602	Frank P. Shekleton	Lawler	Bandit 51574	Percheron
4603	Frank P. Shekleton	Lawler	Univers 51576	Percheron
4611	Frank P. Shekleton	Lawler	Prince Rupert 56738	Percheron
4774	Frank P. Shekleton	Lawler	Prince George 17465	French Draft

CLARKE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
156	J. A. & A. A. Carson	Woodburn	Bardolph 13566	French Draft
234	Hart Bros	Osceola	Hampfield Samson 7153	Shire
213	A. H. Griffin	Osceola	Martello 17988 (37247)	Percheron
38	Charles Swick	Osceola	Hoverton Iron Duke 13366	French Draft
440	Thos. Johnson	Murray	Doctor D. 41505	Trotter
669	W. G. Hindes	Murray	The Spartan 34175	Trotter
682	Hart Bros.	Osceola	Vincennes 50195 (59558)	Percheron
681	Hart Bros	Osceola	Ducal 50194 (60035)	Percheron
413	Milton L. Evans	Murray	Cenright 6966	Clydesdale
1071	Lewis Bros	Osceola	The Black Prince 9345	Clydesdale
1096	G. C. Lucas	Hopeville	Walter J. 20225	Trotter
1135	G. P. Rhodes	Woodburn	Caro (Vol. 7)	Oldenburg Coach
1684	David Mitchell	Murray	Teddy Roosevelt 1067	Belgian
1800	Hart Bros	Osceola	Ducal 50311	Percheron
1816	Hart Bros	Osceola	Abbot 50387	Percheron
1815	Hart Bros	Osceola	Joe-Banker 50386	Percheron
1829	Hart Bros	Osceola	Joseph the Banker 861	Shire
1862	Hart Bros	Osceola	Roublard 50436 (62775)	Percheron
1844	Hart Bros	Osceola	Joe Bailey 50886	Percheron
1845	Hart Bros	Osceola	Spark 50289	Percheron
1846	Hart Bros	Osceola	Du-Rock 50312	Percheron
1847	Hart Bros	Osceola	Victor Gilbert 50621	Percheron
1848	Hart Bros	Osceola	Ralph 50253	Percheron
1849	Hart Bros	Osceola	Jerry Johnson 50252	Percheron
1850	Hart Bros	Osceola	Hempfield Samson 5025	Percheron
1851	Hart Bros	Osceola	Ducal 50674	Percheron
1852	Hart Bros	Osceola	Rataplan 50620 (60462)	Percheron
1853	Hart Bros	Osceola	Mulot 50834 (53778)	Percheron
1854	Hart Bros	Osceola	Cattu 50424 (51569)	Percheron
1855	Hart Bros	Osceola	Granit 50427 (61873)	Percheron
1857	Hart Bros	Osceola	Panquert 50435 (55255)	Percheron
1858	Hart Bros	Osceola	Souaze 50437 (64787)	Percheron
1859	Hart Bros	Osceola	Maubert 50431 (57853)	Percheron
1860	Hart Bros	Osceola	Mosnil 50432 (55589)	Percheron
1861	Hart Bros	Osceola	Mastique 50430 (64774)	Percheron
2001	Hart Bros	Osceola	Slather 8396	Shire
2002	Hart Bros	Osceola	Osceola Sampson 8695	Shire
2003	Hart Bros	Osceola	Champion 50287	Percheron
2004	Hart Bros	Osceola	Spring-Up 50703	Percheron
2005	Hart Bros	Osceola	Senitor 50702	Percheron
2031	Hart Bros	Osceola	Tableau de Aspe 2378 (29916)	Belgian
2032	Hart Bros	Osceola	Slasher 50288	Percheron
2033	Hart Bros	Osceola	Victor-Gilbert 50730	Percheron
2034	Hart Bros	Osceola	Ferry Oak 8441 (23918)	Shire
2085	Hart Bros	Osceola	Osceola Banker 50746	Percheron
2086	Hart Bros	Osceola	Osceola Boy 50747	Percheron
2103	S. S. Critchfield	Woodburn	Balandard 22664 (42798)	Percheron
2121	Hart Bros	Osceola	Jerry Johnson 12218	French Draft
680	Robinson & Griffin	Osceola	Aloes 50217 (55899)	Percheron
1057	David Mitchell	Murray	Jim Jam 32838	Percheron
2216	Hart Bros	Osceola	Royal II 7085	Shire
2215	Hart Bros	Osceola	Ralph 50819	Percheron
2248	Hines Bros	Murray	Osceola Rampton 8852	Shire
2277	Hart Bros	Osceola	Durock 50203	Percheron
2291	Wm. Ritchie, Ed Husted & J. B. Hazlett	Murray	Feramorz 12594	French Draft
2368	Hart Bros	Osceola	Stuntney George 8860 (24653)	Shire
2369	Hart Bros	Osceola	Stuntney Shem 8861 (22835)	Shire
2370	Hart Bros	Osceola	Mistral 50890 (62275)	Percheron
2371	Hart Bros	Osceola	Beatrix 50882 (62373)	Percheron
2373	Hart Bros	Osceola	Dartagnon 50866 (60097)	Percheron
2374	Hart Bros	Osceola	Xavier 50895 (61805)	Percheron
2375	Hart Bros	Osceola	Biffin 50884 (53737)	Percheron
2376	Hart Bros	Osceola	Raab 50893 (58383)	Percheron
2377	Hart Bros	Osceola	Turenne 50897 (58865)	Percheron
2378	Hart Bros	Osceola	Python 50892 (60409)	Percheron
2379	Hart Bros	Osceola	Affuteur 50881 (64666)	Percheron
2380	Hart Bros	Osceola	Benjamin 50883 (54566)	Percheron

CLARKE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2381	Hart Bros	Osceola	Damier 50885 (64212)	Percheron
2382	Hart Bros	Osceola	Domino 50887 (64195)	Percheron
2383	Hart Bros	Osceola	Horoff 50889 (60458)	Percheron
2384	D. B. Hedge	Osceola	Mogol 50891 (62665)	Percheron
2702	C. B. Shinn	Osceola	Conway Prince 978	Belgian
2811	Clark Co. Horse Co.	Osceola	Courgeon 24268 (44031)	Percheron
3059	J. E. Perry	Osceola	Zulman 12368 (5957B)	French Draft
3149	Hart Bros	Osceola	Banker 50980	Percheron
3148	Hart Bros	Osceola	Banker Joseph 9021	Shire
3147	Hart Bros	Osceola	Harts Thumper 9020	Shire
3256	J. A. Voris	Woodburn	Hobson 9734	French Draft
3257	J. A. Voris	Woodburn	Iowa 5452	Shire
3266	Hart Bros	Osceola	Planquin 51035 (58803)	Percheron
3267	Hart Bros	Osceola	Francillon 51028 (62562)	Percheron
3268	Hart Bros	Osceola	Dusserre 51027 (62238)	Percheron
3269	Hart Bros	Osceola	Jupiter 51031 (56613)	Percheron
3270	Hart Bros	Osceola	Riflard 51036 (62337)	Percheron
3271	Hart Bros	Osceola	Turbigo 51038 (56820)	Percheron
3272	Hart Bros	Osceola	Guignol 51030 (63699)	Percheron
3273	Hart Bros	Osceola	Fripon 51029 (51263)	Percheron
3274	Hart Bros	Osceola	Limier 51032 (62294)	Percheron
3275	Hart Bros	Osceola	Orphelin 51034 (60869)	Percheron
3276	Hart Bros	Osceola	Marescot 51033 (62809)	Percheron
3311	Hart Bros	Osceola	Sultan de Thy 2624 (34638)	Percheron
3310	Hart Bros	Osceola	Neron d' Ormei 2663 (20794)	Percheron
3369	Hart Bros	Osceola	Grimaud 41197 (60489)	Percheron
3381	Hart Bros	Osceola	Camille 51026 (58952)	Percheron
3526	J. E. Reese & J. W. Kent	Woodburn	Coco 8826	French Draft
3547	Baldwin, Reed & Ayers	Osceola	Robo 11944 (5966)	French Draft
3675	Hart Bros	Osceola	Hero-Ben 51086	Percheron
3852	Sinnott & Forney	Osceola	Kernal 52062	Percheron
3897	C. T. Ayers	Osceola	Caten 49509	Percheron
4002	R. B. Bartlett	Hopeville	Norwood Brilliant 49330	Percheron
3437	Milton Evans	Murray	Eavineer 33054	Trotter
3921	E. G. Paul	Osceola	Powerful 40993	Percheron
4137	Hart Bros	Osceola	Marengo 51439 (67312)	Percheron
4136	Hart Bros	Osceola	Marnix de Destel 2894 (41522)	Belgian
4195	J. G. Carns	Murray	Sampson 51513	Percheron
439	Roy Sink	Hopeville	Colonel Duroc 37967	Trotting
4435	W. C. Hindes	Murray	Nemerod 51710 (60354)	Percheron
4437	Hart Bros	Osceola	Le Bon IX 9344 (23426)	Shire
235	C. B. Shinn	Osceola	Ranger 6470	Shire
4715	J. M. Fenn	Murray	Gazouillis 42729 (71406)	Percheron
4831	Hart Bros.	Osceola	Osceola Chief 52044	Percheron
4914	E. O. Twombley	Osceola	Purne 2896 (41926)	Belgian
5037	L. L. Toutman	Osceola	Ecervele 51825 (61870)	Percheron
5039	J. F. Reasoner	Murray	Hasty Boy 49793	Trotter
5051	E. O. Twombly	Osceola	Nugget 10840	French Draft
5090	J. P. Pratt	Osceola	Joe Marshall 49033	Trotter
5127	Hart Bros.	Osceola	Gontran 42232 (55970)	Percheron
5128	Hart Bros.	Osceola	Guiton 52235 (71531)	Percheron
658	J. W. Stephenson	Murray	Creston Mack 10054	French Draft
5244	W. C. Hindes	Murray	Jacob 51832 (68389)	Percheron
2622	E. G. Paul	Osceola	Loyalty 11978	French Draft
5261	T. A. Patterson	Osceola	Hainzel 52236 (75657)	Percheron
5324	Hart Bros.	Osceola	Torpilleur 52294 (67784)	Percheron
5325	Hart Bros.	Osceola	Hoche 52292 (66521)	Percheron
5326	Hart Bros.	Osceola	Homard 52293 (74011)	Percheron
5327	Hart Bros.	Osceola	Carabi 52290 (68472)	Percheron
5328	Hart Bros.	Osceola	Urville 51436 (64505)	Percheron
5329	Hart Bros.	Osceola	Duke 1587	Belgian
5340	A. M. Kelley	Osceola	Artemus 57702	Percheron
5355	Hart Bros.	Osceola	Alex 3834 (46828)	Belgian
5366	Hart Bros.	Osceola	Joubert 3836 (46812)	Belgian

CLAY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
508	A. A. Reynolds	Spencer	Jonas 41868 (55201)	Percheron
1460	C. I. Ginger	Langdon	Sam H. 25880	Percheron
1561	Spencer Draft Horse Co.	Spencer	Monaco 1185 (19354)	Belgian
1659	Harmony, Greenville & Douglas Horse Co	Greenville	Romarin 27435 (43618)	Percheron
2028	Alonzo Jones	Peterson	Jumbo G. 8314	Shire
2230	J. W. & Frank McDowell	Greenville	Bolsinger 33323	Trotter
2353	Royal Horse Co	Peterson	Pepin 29490 (45751)	Percheron
2518	Frank McDowell	Spencer	Favorette 40658	Percheron
2519	Frank McDowell	Spencer	Nogentais 23198 (43781)	Percheron
2504	Frank McDowell	Spencer	Kenmor 23023	Percheron
1272	Stouffer, Peterson & Erfmeyer	Fostoria	Urson 2837	French Coach
2980	I. N. Reed	Webb	Audley Boy 7154 (Vol. 25)	Shire
2990	Spencer Draft Horse Co	Spencer	Armagh 2523 (Vol. 13, p. 543)	Belgian
3050	E. U. Roberts	Dickens	Tricolet 50650 (60116)	Percheron
3312	H. H. Mills	Webb	Reno 35761	Percheron
2283	W. H. Brown	Peterson	Knute 18964	Percheron
4262	J. C. Clark	Dickens	Black Prince 50389	Percheron
4607	A. W. Jones	Peterson	Judge Lockford 34157	Trotter
458	J. O. Johnson	Royal	Stockwell IV 6858 (20055)	Shire
2518	Albert Reno	Everly	Favorette 40658	Percheron
5235	F. J. Clarke	Fostoria	Lee Allerton Jr. 41612	Trotter
3171	Fred McKee	Dickens	Improver 4017	Clydesdale
3140	D. McMillan	Peterson	Flanche 46481 (53966)	Percheron

CLAYTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
146	Koontz Bros	Monona	Buzot de Picton (29360)	Belgian
522	J. L. Schneider	Elkader	Triton 42875 (44805)	Percheron
523	J. L. Schneider	Elkader	Clarion De Bel Air 1721 (20522)	Belgian
497	Joseph Cain	Elkader	Iron Duke 29304	Percheron
648	Pettit & Koontz	Monona	Royal Emblem 43208	Trotter
668	Smith & Kahlbaum	Elkader	David De Volle 1347 (24318)	Belgian
958	Kaiser Bros	St. Olaf	Torpilleur 42832 (59926)	Percheron
1386	Wm. Koth & Co.	Farmersburg	Larbin 42881 (54647)	Percheron
1458	A. A. Kishman & A. Henkes	Farmersburg	LeFertois 26296 (18836)	Percheron
1832	G. E. Bachtell	Volga	Star Onward 31514	Trotter
2241	Jas. Crain	Volga	Mercure 25721 (43490)	Percheron
2242	Jas. Crain	Volga	Laddie 45427	Percheron
2397	Geo. Voshell	Volga	Jabot 41034 (53708)	Percheron
2544	Garnavillo Shire Horse Co	Garnavillo	Magnum Bonum IV 7928 (18901)	Shire
2837	Mrs. E. E. Meyers	Elkader	Chabrol 26076 (44799)	Percheron
2926	Hurley & Meyer	Volga	Elvenden First Lord 8583 (23919)	Shire
3262	Henry Jennings, J. C. & Wm. Probert	Volga	Pete 48051	Percheron
3430	M. S. Welch	Volga	Penrose 6174	Shetland Pony
3472	J. M. Donnelly	Bloom'ton, Wis	Earl King 21817	Trotter
3354	H. C. Bothmer Co	Clayton	Allen Gilbert 42182	Trotter
3549	Humphrey & Leahy	Volga	Paul 1944	French Coach
3569	Gordon White	Volga	Catuamet 31792	Trotter
3598	Percheron Horse Co.	Clayton	Young Cherri 25884	Percheron
1201	C. H. Donahe	Mederville	La Salle 21566	Percheron
4086	J. L. Eno	Launa	Black King 45303	Percheron
4119	L. Rosener	Guttenburg	Clipper of Fairfield 3980)	Trotter
276	W. F. Lees	Monona	Floyd Jim 43950	Percheron
3429	Gus Seeman et al	Guttenberg	Montague 25357	Percheron
4899	J. H. Benzing	Girard	Jongleur 3265 (46586)	Belgian

CLAYTON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4980	Fred White	Volga City	King George 17162	French Draft
5000	F. W. Kann & T. Barnes	Guttenberg	Bierset 1868 (23064)	Belgian
5003	John L. Sceneider	Elkader	Louis d' Or 3719 (42914)	Belgian
1628	Hiram Briggs	Mederville	Bury Colonel 6168 (17220)	Shire
5031	Dan Schneider	Elkader	Grenadier 2760 (Vol. XV.)	Belgian
5130	Wm. Costigan	Elkport	Slocum 52226	Percheron
5216	Geo. Dill	Volga	Volga Tom 10361	French Draft

CLINTON COUNTY

527	A. W. Johnson	De Witt	Valespir 11318	French Draft
525	A. W. Johnson	De Witt	Bordelon 38677	Trotter
526	A. W. Johnson	De Witt	Border Wilkes 29022	Trotter
528	A. W. Johnson	De Witt	Margot 27846 (47018)	Percheron
513	J. E. Shannon	De Witt	Sebastian 13886	French Draft
529	A. W. Johnson	De Witt	Enfield Stylish Chief 7935 (21404)	Shire
790	Center Grove Horse Co.	Charlotte	Frank 9926	French Draft
1050	George Corbin	Calamus	Babeuf 44307 (51767)	Percheron
1051	George Corbin	Calamus	Simon De Rosoux 1839 (25366)	Belgian
994	Peter Frett	Brown	Africander (45089)	Percheron
1372	Chris Lund	Elwood	Apollon (19098)	Belgian
1544	Grand Mound Horse Co.	Grand Mound	Pedro 28621	Percheron
1556	O. C. Henyon	Clinton	C. H. 33188	Trotter
1985	Wm. Burk	Charlotte	Brulot 41504 (59670)	Percheron
2438	Wm. Tinnefeldt	Lost Nation	Colson (62987)	Percheron
2714	Hicks Bros	Elwood	Lion de Buzet (30272)	Belgian
1041	A. W. Johnson	De Witt	Dewey Boy 39220	Trotter
2822	Brindisi Percheron Horse Co.	Bryant	Brindisi 22723 (43414)	Percheron
3082	J. O. Ott	Baldwin	Glendale Major 42438	Percheron
3156	Wm. F. Heinke	Delmar	Vergoin 35101 (45656)	Percheron
3906	A. W. Johnson	De Witt	Paul 51532	Percheron
4042	A. W. Johnson	De Witt	Lew Karr 44300	Trotter
3618	A. W. Johnson	De Witt	Keota Emmett 8271	Shire
4157	A. W. Johnson	De Witt	Decide 47084 (62936)	Percheron
4127	A. W. Johnson	De Witt	Invite 51872 (64997)	Percheron
4878	F. U. Williams	Charlotte	Wayne 15440	French Draft
4879	Big Four Horse Co.	Lyons	Aristomene 55364 (66275)	Percheron
4995	Geo. McClintock	Almont	Finstall Triumph 9822 (25199)	Shire
5321	Wm. Meyers	Almont	Britt 18170	French Draft
4525	Wm. Burke	Charlotte	Pasteur 3182 (41994)	Belgian

CRAWFORD COUNTY

200	L. P. Rose	Charter Oak	General 186	Oldenburg Coach
980	Peter J. Eggers	Denison	Archie 34897	Percheron
981	Peter J. Eggers	Denison	Corbett 42790	Percheron
982	Peter J. Eggers	Denison	Mont Dor 8977	French Draft
983	Schlichta Bros	Denison	Vulcan 26841	Percheron
965	B. B. White	Manilla	Young Malkoff 9351	French Draft
1151	W. H. Lamb	Denison	Decorah Jr. 32331	Trotter
1334	R. Knaul	Denison	Absola 43175	Trotter
1488	Fred Coleman	Charter Oak	Victor Dewey 45479	Percheron
1656	Peter Jensen	Charter Oak	Energy 745 (4788)	Belgian
1640	Ida and Sac County Percheron Horse Co.	Kiron	Feder 40143 (51266)	Percheron
2391	Chris Koock	Boyer	Bismark de Braibnt 1703 (25394)	Belgian
2494	Henry N. Kuehl	Schleswig	Beau Souvenir (15014)	Belgian
2648	F. J. Smith	Charter Oak	Parnell Beauty 9179	Clydesdale
2672	Kemp & Killeen	West Side	Victor 11478	French Draft
2673	James Killeen	West Side	Arizona 13138	French Draft

CRAWFORD COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2566	H. C. Pithan & Herman Garbe	Charter Oak	Michaux 14893	French Draft
1940	H. H. Chapman & H. J. McGill	Vail	Tarascon 50552 (55555)	Percheron
2932	Adolf Meyer, Sr.	Charter Oak	Salvator 50219 (80080)	Percheron
3166	J. B. Gardner	Manilla	Mastique II De Vlieringen 1976 (28098)	Belgian
3253	Hugh Daugherty	Manilla	Titus 1735 (8969)	German Coach
3264	P. A. Klinkefus	Manilla	Sultan 285	Suffolk
3512	T. M. Sheridan	Vail	Gravier 28479 (45129)	Percheron
3513	T. J. Kenney	Vail	Iowa Ranger 30713	Trotter
3544	L. P. Rose	Charter Oak	Tammo (12103)	German Coach
3612	Schmadke Bros	Denison	Colenso 1402 (25901)	Belgian
4060	L. P. Rose	Charter Oak	Piston 40903 (45721)	Percheron
3397	Tom Ransom	Denison	Harry Judge 34560	Trotter
4227	Albert Peterson	Dow City	Godolphin 48874	Percheron
303	F. W. Miller	Manilla	Bon Atas 7754	Shire
1700	Ellsie Brokelsly	Vail	Hanksoid 33113	Trotter
4491	T. M. Sheridan	Vail	Jurieu 54160	Percheron
374	Isaac Smith	West Side	Foxie 2058	Percheron
4830	Perchon Horse Co	Dow City	Paul 15019	French Draft
4684	Geo. W. Binnall	Dow City	Charlot 3413 (42710)	Belgian
4701	Geo. W. Binnall	Dow City	Kruger d' Hubaumont 3419 (45742)	Belgian
3522	Gallagher Bros	Vail	Matinal 25768 (44350)	Percheron
5191	C. A. Saunders	Manilla	Furet 58341 (66291)	Percheron
1004	Chris Koch	Boyer	Zephie de Herlaimont (Vol. 13)	Belgian

DALLAS COUNTY

131	J. B. Saum	Woodward	Sans Tache 22012 (43146)	Percheron
226	Martin Russell	Dallas Center	Wenona Regent 22564	Percheron
253	Belgian Horse Co	Redfield	Saint Martin (29462)	Belgian
317	Leon Mills	Perry	Banner 13189	French Draft
318	J. R. Mills	Perry	Narcisse 21992 (42440)	Percheron
324	W. B. Fritz	Dexter	Sergeant Major 8292 (21849)	Shire
336	T. P. Cushing	Booneville	Scarcliff Sweep (8173)	Shire
287	Thos. Eckert	Woodward	Jules 647	Belgian
652	Stoots & Kline	Redfield	Carral (51564)	Percheron
50	J. H. Andrew	Dexter	Earl Royal 37070	Trotter
637	R. S. Barr	Adel	Dan McCloud 43130	Trotter
636	R. S. Barr	Adel	Colonel McCoy 33112	Trotter
768	Robt. Burchfield	Linden	Rex Legrand 1993	Saddle Horse
658	W. S. Robinson	Dexter	Jim Kelly 43068	Trotter
626	De Soto Shire Horse Co	De Soto	Halstead Duke 7352 (20537)	Shire
409	J. F. Turner	Linden	Facteur 26913 (45803)	Percheron
767	Wm. A. Warford	Linden	Grant 9138	French Draft
1056	Dawson Draft Horse Co	Dawson	Fairfield Stormer 5673	Shire
1136	T. A. Thornburg	Linden	Maynard 10022	French Draft
1199	C. B. Pierce	Woodward	Major De Beaumont (20760)	Belgian
1401	D. C. Kelly	Dallas Center	Laurens 41030	Percheron
1489	Perry Belgian Horse Co	Perry	Vulcan 2235 (25410)	Belgian
1675	John Bair	Perry	Dewey 10974	French Draft
1676	John Bair	Perry	Bataclan 30587 (48721)	Percheron
1786	Belgian Horse Co	Dexter	Coco (10448)	Belgian
1826	A. W. Dickerson	Woodward	Hero-Ben 50251	Percheron
1836	J. R. Mills	Perry	Salem 15092	French Draft
1835	J. R. Mills	Perry	Minot 15090	French Draft
1834	J. R. Mills	Perry	Conrad 15087	French Draft
1833	Leon Mills	Perry	Constant 15086	French Draft
1840	Emery Skinner	Adel	Rapin 24496 (42413)	Percheron
2218	W. E. DuToit	Woodward	Abel 677 (581)	German Coach
2674	Elwood Beasley	Adel	Linwood 22566	Percheron
2431	H. C. Addy	Van Meter	Yacca 35903	Trotter
2560	I. C. Stine	Dallas Center	Iowa Chief 2569	Shire

DALLAS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2734	Theodore Quick	Dexter	Tuduc 14991 (57768P)	French Draft
2827	J. A. Minteer	Van Meter	Prince I. X. L. 43530	Trotter
3388	J. H. Andrew	Dexter	Victor 24128	Percheron
3402	C. H. Green	Woodward	Ted 45859	Percheron
3433	C. W. Council	Perry	Pimeto 18761	Trotter
3432	C. W. Council	Perry	Drifton 12165	Trotter
3434	R. C. Taylor	Perry	Taylor W. 42190	Trotter
3489	John J. Wolber	Woodward	Major Murray 4597	Shire
3541	Roy R. Estls	Minburn	Nick 46503	Percheron
3562	C. H. Gardiner	Bouton	Nobelmann (Vol. 7)	Oldenburg Coach
3616	R. K. Purviance	Minburn	French 15730	French Draft
3891	Henry Schnoor	Perry	Profit 7296	Shire
4024	Ortonville Horse Co.	Waukee	Ronflant 51434 (61553)	Percheron
2319	C. M. Badger	Adel	Castor 41848 (62526)	Percheron
4225	A. B. McCleeary	Booneville	Demblon 1327 (13188)	Belgian
4269	J. H. Royle	Dallas Center	Molitor 44035	Percheron
4274	Belgian Horse Co	Minburn	Gaspard de Liroux (26910)	Belgian
4307	R. S. Witter	Dawson	Avenir de Thines 3008 (34174)	Belgian
4355	Crawford Bros	Bouton	Rubis de Berlin 1355 (23076)	Belgian
4846	H. Giles	Perry	Oyama 43373	Percheron
4845	H. Giles	Perry	Picadere 57820	Percheron
4848	J. E. Brooker	Van Meter	Farmer Scott 10238	Shire
1480	Champ Forret	Waukee	Flashlight Prince 7701	Shire
5042	Wm. McCarthy	Perry	Colin de Horion 3360 (42778)	Belgian
5094	O. V. Harden	Linden	Keota Teddie 6882	Shire
5095	Grant Dunbar	Linden	Thumper 13754	Clydesdale
5103	J. O. Gring	Dallas Center	Berlucheur 55921 (65107)	Percheron
5105	John Bair	Perry	Quanea Harold II 9254 (24793)	Shire
5156	C. W. Huston	Booneville	McDaniel Boy 47931	Trotter
5169	C. F. Maurer	Perry	Jerry Devon 48879	Trotter
5221	J. L. Simcoke	Adel	Noble Gregory 50309	Trotter
5230	Henry Schnoor	Perry	Edgar 58098	Percheron
812	Jonas Walter	Perry	Argus du Fagot 2612 (29434)	Belgian
649	Roy J. Ellis	Minburn	Joe Banker 6976	Shire
4356	A. Betzenhouser	Dallas Center	Dance 12934 (53888)	French Draft
5332	Huston Bros	Waukee	Broadway 10230 (25993)	Shire

DAVIS COUNTY

252	W. E. Irvin	R. No. 1, Floris	Enterprise 4047	Clydesdale
294	J. D. Baughman	Pulaski	Lightfoot 13749	French Draft
333	Jno. Augspurger	Pulaski	Titus 4669	Morgan
557	E. S. Stockman	Bloomfield	Togo 13764	French Draft
556	E. S. Stockman	Bloomfield	Tedy-R 34522	Percheron
592	B. F. Ritz	Pulaski	Fletcher 29112	Percheron
700	Wm. G. Brown	Bloomfield	Merak 9672	French Draft
972	L. C. Warthen	Bloomfield	Troubadour 26061 (46815)	Percheron
904	W. C. Baughman	Pulaski	Colonel 13015	French Draft
905	W. C. Baughman	Pulaski	Leroy II 14182	French Draft
906	W. C. Baughman	Pulaski	Initial 20030	Percheron
907	W. C. Baughman	Pulaski	Grand Papillon 29761	Percheron
1085	Albert Munn	Belknap	Major R. 10394	French Draft
1079	Peter B. Horn	Bloomfield	Brilliant 27209	Percheron
1054	W. W. Powers	Bloomfield	Jericarde 21857	Percheron
884	J. W. McConnell	Drakesville	Lorin 23700	Percheron
1165	N. E. Merry	Bloomfield	Jerome 9819	French Draft
1475	James McGowan	Bloomfield	Baron Laddie 39865	Trotter
1476	James McGowan	Bloomfield	Motell 40427	Trotter
1477	James McGowan	Bloomfield	Reed Bismont 34102	Trotter
1721	P. G. Martin	Bloomfield	Ecumeur 28457 (45983)	Percheron
2322	A. L. Watson	Pulaski	Delcarde (7510)	Percheron
2386	I. C. Evans	Troy	Andrew Carnagie 44363	Percheron
2388	J. & M. Horan	Floris	Samson 10395	French Draft
2679	C. F. Davis	Bloomfield	Beaucamp 19938	Percheron

DAVIS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2806	J. M. Peden	Floris	Noceur 11326 26911P (45829)	French Draft Percheron
2807	N. M. Peden	Floris	Gaylord 11867	French Draft
2828	I. C. Evans	Troy	Picador 40385	Percheron
2943	Wm. J. Plank	Bloomfield	Daniel 13002	French Draft
3043	L. W. Cruikshank	Bloomfield	Big Fox 12708	Trotter
3118	A. A. Morgan	Bloomfield	Indi 30823	Trotter
3117	A. M. Swift	Bloomfield	Bonnie Dillon 30589	Trotter
3165	Cronk & Wise	Bloomfield	Uncle Bob 9958	French Draft
839	C. B. Swartzendruver	Pulaski	Demon II 19407	Percheron
3297	Geo. Baird	Bloomfield	Renebel 36731	Trotter
3363	W. S. McFarlin	Bunch	Caserio 43348 (52417)	Percheron
3453	L. E. Cambron	Bloomfield	S. E. H. 26654	Thoroughbred
3454	U. W. Boatman	Lunsford	Topsman 12561	French Draft
3539	P. C. Martin	Bloomfield	Mosco 41954	Percheron
3654	I. C. Evans	Troy	Paul 50480	Percheron
3665	L. C. & Walter Warthen	Bloomfield	Turbulant 47078 (63496)	Percheron
4079	J. F. Albright	Ashgrove	Demon's Dictator 53150	Percheron
4353	Albert Munn	Belknap	Sebeski 51348 (63804)	Percheron
4352	Albert Munn	Belknap	Brilliant III 14183	French Draft
4496	Al Power	Bloomfield	Le Roy III 15498	French Draft
4537	L. W. Cruikshank	Bloomfield	Perfection 44516	Percheron
4538	Robt. Kinsler	Drakesville	Banker 13752	Clydesdale
2817	Thos. Laugh	Bloomfield	Theadore 34783	Percheron
4871	James McGowan	Bloomfield	Shelford Friar 9853 (24608)	Shire
4885	Thos. Laugh	Bloomfield	Leward 17090	French Draft
4891	James McGowan	Bloomfield	Iowa Todd 46461	Trotter
5160	J. W. McConnell	Drakesville	Vaillant 15212	French Draft
5222	M. S. Paris	Bloomfield	Bricoli 47070 (64488)	Percheron
5223	M. S. Paris	Bloomfield	Keota Andrew 49053	Percheron

DECATUR COUNTY

589	J. W. Mather	Lamoni	Glenbrino 30412	Trotter
565	J. S. Beavers	Woodland	Willingham Lad 5928 (18453)	Shire
663	Pleasanton Horse Co.	Pleasanton	Manuel (51817)	Percheron
984	E. P. Hamilton	Garden Grove	Ferndale 10529	French Draft
985	E. P. Hamilton	Garden Grove	Creston Jerry 6205	Shire
986	E. P. Hamilton	Garden Grove	Harbison 29900	Trotter
1264	W. M. Frost	Leon	Souldern Vulcan 7501 (20038)	Shire
1358	N. L. Chase	Garden Grove	Prince of Norwood 1358	French Draft
1504	C. E. Thompson	Leon	Major McKinley Jr. 955	Belgian
1135	Wm. Goodman	Leon	Admiral Sampson 24957	Percheron
2137	Wm. Goodman	Leon	Augerau 44037	Percheron
2246	E. Gregory	Weldon	Glendive 50155	Percheron
2323	James Howell	Leon	Vampar 24560 (43505)	Percheron
2321	Van Wert Percheron Horse Co.	Van Wert	Vaillant 50642 (55506)	Percheron
2333	Andover Draft Horse Co.	Lamoni	Pekin 1701 (17450)	Belgian
488	H. L. Coontz	Woodland	Bury Ironclad 6692 (20332)	Shire
2447	Geo. P. Britt	Leon	Osceola Champion 11597	French Draft
1661	Leon Horse Co.	Leon	Luron D'Orbais 2257 (Vol. 12)	Belgian
2829	A. A. Rew	Lamoni	Prince Henry 8207	Shire
2908	O. W. Hood	Le Roy	Nougat 22658 (43653)	Percheron
2937	Chas. Boor & E. H. Abraith	Le Roy	Mirko 640 (3934)	Belgian
3046	Theo. Brenizer	Lamoni	Faro d'Estinnes 2220 (29510)	Belgian
3086	Eden Prairie Shire Horse Co.	Leon	Highland Laddie 7950 (22976)	Shire
3401	Wilber Prall	Lamoni	Wilesman 21078	Trotter
3551	B. E. Rushing	Le Roy	Jeff G. 32150	Trotter
3563	W. H. Hazlet	Leon	Eastwood Field Marshal 8991 (24217)	Shire

DECATUR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3576	John P. Kline	Weldon	Beaudoin 10341 (13923)	Percheron
3590	R. J. Critchfield	Weldon	Nickson Sprague 44368	Trotter
3591	R. J. Critchfield	Weldon	Prince Imperial 20640	Percheron
3606	Chas. E. Hall	Weldon	Marquant 32430 (48896)	Percheron
1724	N. L. Chase	Garden Grove	Marquis Dewey 11047	Clydesdale
2249	Otis Deisher	Woodland	Eastern Craftsman 6240 (19575)	Shire
3996	E. P. Hamilton	Garden Grove	Jumbo 51260	Percheron
3997	E. P. Hamilton	Garden Grove	Boliver 51261	Percheron
3998	E. P. Hamilton	Garden Grove	Dale 51259	Percheron
4207	S. P. Rogers	Pleasanton	Tellico II 15022	French Draft
4409	Truman's Pioneer Stud - Keeper Wm. Camp	Leon	8190 Hockwold Bordeaux	Hackney
4509	S. W. Robbins Horse Co	Decatur	Turco 52103 (55108)	Percheron
4516	I. Rees Jones	Grand River	Gleenwood 45723	Trotter
4553	S. Snowden	Garden Grove	Lockinge Anglo-Saxon 9615 (20646)	Shire
4569	C. A. Luce	Weldon	Osler 46238	Trotter
3401	W. R. Chandler	Decatur	Wilkesman 21078	Trotter
4608	Chas. E. Hall	Weldon	Vistor 42354	Percheron
4700	Otis Deisher	Woodland	Osceola Jumbo 10135	Shire
2158	C. A. Luce	Weldon	Port Arthur 41412 (61936)	Percheron
4904	Claude E. Wood	Weldon	Bibia 2136 (Vol. 12)	Belgian
3037	Dr. McNay	Garden Grove	Joe Cedric 40861	Trotter
5050	N. L. Chase	Garden Grove	Marquis Dewey 11047	Clydesdale
5126	Numan Edwards	Grand River	Jambo 52041	Percheron
5117	E. P. Hamilton	Garden Grove	C. S. S. 48012	Trotter
5118	E. P. Hamilton	Garden Grove	Jean Farochon 59525	Percheron
5359	G. F. Henderson	Davis City	Theddlethorpe Warrior 9857 (25820)	Shire
5373	B. E. Rushing	LeRoy	Morganmont 5430	Morgan
5382	Geo. McKeowen	Pleasanton	Joyeux (33260)	Belgian

DELAWARE COUNTY

122	E. W. Cook	Manchester	Conway Hercule 878	Belgian
671	Enterprise Horse Co.	Ryan	Mouton (53341)	Percheron
746	Henry Goodhile	Manchester	Commodore Dewey 8883	Clydesdale
715	Henry Percival	Manchester	Ideal D. 14562	Trotter
921	W. A. Lang & Co.	Greeley	Black Diamond 42423	Percheron
931	W. A. Lang & Co.	Greeley	Zurich De Ronquieres 2233 (27594)	Belgian
936	W. A. Lang & Co.	Greeley	Marquis De Velroux (Vol. 13, p. 513)	Belgian
938	W. A. Lang & Co.	Greeley	Cacas Wild (32040)	Belgian
939	W. A. Lang & Co.	Greeley	Mouffle (37362)	Belgian
942	W. A. Lang & Co.	Greeley	Bourguinon (36950)	Belgian
943	W. A. Lang & Co.	Greeley	Mikado (36916)	Belgian
945	W. A. Lang & Co.	Greeley	Werther (Vol. 13, p. 287)	Belgian
946	W. A. Lang & Co.	Greeley	Bijou Du Moulin (36608)	Belgian
949	W. A. Lang & Co.	Greeley	Roustan (33822)	Belgian
1087	W. B. Van Alstyne	Manchester	Osceola Prince 5988	Shire
1117	H. Pugh	Ryan	Bahno 38751	Trotter
1413	Ryan Horse Co	Ryan	Gelif 27109 (45385)	Percheron
1609	F. W. Smith	Manchester	Capricorne 24719 (44606)	Percheron
1767	Geo. Coldsborough	Dundee	Lexington Macey 26408	Trotter
1821	A. B. Holbert	Greeley	Clamart (57369)	Percheron
1863	A. B. Holbert	Greeley	Tonsin (28530)	Belgian
1866	A. B. Holbert	Greeley	Stuntney Sagamore (23828)	Shire

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1868	A. B. Holbert	Greeley	Rip Van Winkle (23640)	Shire
1869	A. B. Holbert	Greeley	Stuntney Button (23743)	Shire
1873	A. B. Holbert	Greeley	Redlynch Mentor (22716)	Shire
1874	A. B. Holbert	Greeley	Cherry Farmer (23155)	Shire
1875	A. B. Holbert	Greeley	Tansor Prince (22848)	Shire
1876	A. B. Holbert	Greeley	Stone Ashton Nabob (23730)	Shire
1877	A. B. Holbert	Greeley	Troag Conqueror (23931)	Shire
1879	A. B. Holbert	Greeley	Boxeur D'Oplinter 2384 (33012)	Belgian
1880	A. B. Holbert	Greeley	Bebe De Hex 2383 (33352)	Belgian
1881	A. B. Holbert	Greeley	Cresus D'Ap 2385 (36920)	Belgian
1882	A. B. Holbert	Greeley	Pierrot De Kemexhe 2390 (37428)	Belgian Belgian
1883	A. B. Holbert	Greeley	Zut 2393 (30746)	Belgian
1884	A. B. Holbert	Greeley	Brigadier 2380 (25444)	Belgian
1885	A. B. Holbert	Greeley	Bourguignon 2382 (Vol. 13, p. 698)	Belgian
1887	A. B. Holbert	Greeley	Capitaine De Questenne 2474 (28324)	Belgian
1888	A. B. Holbert	Greeley	Joubert D'Enixhe 2476 (Vol. 13, p. 469)	Belgian
1889	A. B. Holbert	Greeley	Midas 2480 (Vol. 13, p. 935)	Belgian
1890	A. B. Holbert	Greeley	Ortoni 2481 (Vol. 13, p. 620)	Belgian
1891	A. B. Holbert	Greeley	Bruno De Hartenge 2472 (Vol. 13, p. 528)	Belgian
1892	A. B. Holbert	Greeley	Syveton 2482 (Vol. 13, p. 619)	Belgian
1893	A. B. Holbert	Greeley	Marin II 2479 (36496)	Belgian
1894	A. B. Holbert	Greeley	Bayard Bierse 2473 (34696)	Belgian
1895	A. B. Holbert	Greeley	Le Dernier 2478 (35462)	Belgian
1896	A. B. Holbert	Greeley	Teutone (2154)	Belgian
1897	A. B. Holbert	Greeley	Triumpf (2153)	Holstein Coach
1899	A. B. Holbert	Greeley	Trompeter (2152)	Holstein Coach
1900	A. B. Holbert	Greeley	Rittmeister (2085)	Holstein Coach
1901	A. B. Holbert	Greeley	Goldfellow 3507	German Coach
1902	A. B. Holbert	Greeley	Waldemar 2507	German Coach
1903	A. B. Holbert	Greeley	Conseil 50515 (63464)	Percheron
1904	A. B. Holbert	Greeley	Milan 50543 (59935)	Percheron
1905	A. B. Holbert	Greeley	Chamant 50512 (59938)	Percheron
547	Wm. J. Claus	Delaware	Joe Anderson 40174	Percheron
1906	A. B. Holbert	Greeley	Arlequin 50503 (62524)	Percheron
1907	A. B. Holbert	Greeley	Tartarin 50553 (55554)	Percheron
1908	A. B. Holbert	Greeley	Idem 50530 (63371)	Percheron
1909	A. B. Holbert	Greeley	Lutteur 50539 (57156)	Percheron
1910	A. B. Holbert	Greeley	Avenir D' Erbi 2381 (29458)	Belgian
1911	A. B. Holbert	Greeley	Grain D'Or D'Awans 2387 (32418)	Belgian
1912	A. B. Holbert	Greeley	Hercule De Vald (33290)	Belgian
1913	A. B. Holbert	Greeley	Puissant (33288)	Belgian
1915	A. B. Holbert	Greeley	Biocarde 50625 (63288)	Percheron
1916	A. B. Holbert	Greeley	Coquet 50626 (64336)	Percheron
1917	A. B. Holbert	Greeley	Krasis 50630 (63367)	Percheron
1918	A. B. Holbert	Greeley	Louvigny 50531 (63539)	Percheron
1919	A. B. Holbert	Greeley	Martinet 50532 (58905)	Percheron
1920	A. B. Holbert	Greeley	Herien 50629 (63373)	Percheron
1921	A. B. Holbert	Greeley	Glorieux 50628 (56527)	Percheron
1922	A. B. Holbert	Greeley	Pollux 50633 (58788)	Percheron
1923	A. B. Holbert	Greeley	Rosier 50635 (55147)	Percheron
1924	A. B. Holbert	Greeley	Eldorado 50627 (60095)	Percheron
1925	A. B. Holbert	Greeley	Retour 50634 (61618)	Percheron
1927	A. B. Holbert	Greeley	Turbot 50555 (56725)	Percheron
1928	A. B. Holbert	Greeley	Ictere 50533 (63372)	Percheron
1929	A. B. Holbert	Greeley	Liao 50537 (62479)	Percheron
1930	A. B. Holbert	Greeley	Lusignan 50538 (62499)	Percheron

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1931	A. B. Holbert	Greeley	Marceau 50541 (62874)	Percheron
1932	A. B. Holbert	Greeley	Mathurin 50542 (59438)	Percheron
1933	A. B. Holbert	Greeley	Madrid 50540 (53077)	Percheron
1934	A. B. Holbert	Greeley	Pomard 50547 (55615)	Percheron
1935	A. B. Holbert	Greeley	Philosophe 50546 (61833)	Percheron
1937	A. B. Holbert	Greeley	Roussillon 50550 (62155)	Percheron
1938	A. B. Holbert	Greeley	Ramoneur 50549 (62475)	Percheron
1939	A. B. Holbert	Greeley	Telephone 50554 (60100)	Percheron
1941	A. B. Holbert	Greeley	Talma 50551 (62500)	Percheron
1942	A. B. Holbert	Greeley	Vainqueur 50557 (54334)	Percheron
1943	A. B. Holbert	Greeley	Vallon 50559 (63026)	Percheron
1944	A. B. Holbert	Greeley	Vibrant 50560 (59941)	Percheron
1946	A. B. Holbert	Greeley	Turco 50556 (62731)	Percheron
1948	A. B. Holbert	Greeley	Armor 50505 (62317)	Percheron
1949	A. B. Holbert	Greeley	Amiral 50501 (61712)	Percheron
1950	A. B. Holbert	Greeley	Arlequin 50504 (63767)	Percheron
1951	A. B. Holbert	Greeley	Bardoux 50536 (62831)	Percheron
1952	A. B. Holbert	Greeley	Bataclan 50506 (62478)	Percheron
1953	A. B. Holbert	Greeley	Brillant 50508 (53950)	Percheron
1954	A. B. Holbert	Greeley	Comteyr 50511 (52724)	Percheron
1955	A. B. Holbert	Greeley	Biscuit 50507 (63791)	Percheron
1956	A. B. Holbert	Greeley	Castor 50510 (59937)	Percheron
1957	A. B. Holbert	Greeley	Cabaster 50509 (63079)	Percheron
1958	A. B. Holbert	Greeley	Considerant 50516 (60084)	Percheron
1959	A. B. Holbert	Greeley	Costo 50517 (63970)	Percheron
1960	A. B. Holbert	Greeley	Chatlet 50513 (57372)	Percheron
1962	A. B. Holbert	Greeley	Derval 50519 (62567)	Percheron
1964	A. B. Holbert	Greeley	Ecorpain 50522 (62488)	Percheron
1965	A. B. Holbert	Greeley	Edison 50523 (63119)	Percheron
1966	A. B. Holbert	Greeley	Estival 50524 (63653)	Percheron
1967	A. B. Holbert	Greeley	Etudiant 50525 (63073)	Percheron
1968	A. B. Holbert	Greeley	Facteur 50526 (64154)	Percheron
1969	A. B. Holbert	Greeley	Fierot 50527 (62666)	Percheron
1970	A. B. Holbert	Greeley	Flerridalenzen 50528 (63948)	Percheron
1971	A. B. Holbert	Greeley	Harley 50532 (61724)	Percheron
1972	A. B. Holbert	Greeley	Farino 50665 (62885)	Percheron
1973	A. B. Holbert	Greeley	Racine 50666 (60613)	Percheron
1995	A. B. Holbert	Greeley	Passe Partout 2389 (35570)	Belgian
1996	A. B. Holbert	Greeley	Garcon de Bothey 2385 (Vol. 13, p. 600)	Belgian
1998	A. B. Holbert	Greeley	Valerien 50558 (62497)	Percheron
1999	A. B. Holbert	Greeley	Pedro 50545 (55549)	Percheron
2000	A. B. Holbert	Greeley	Guignol 50531 (57894)	Percheron
2095	Peter Milroy	Hopkinton	Hero 23943	Percheron
2096	Peter Milroy	Hopkinton	Sampson 26529	Percheron
2097	Peter Milroy	Hopkinton	Bravo 22166	Percheron
2098	Peter Milroy	Hopkinton	La-Forte 34839	Percheron
2099	Peter Milroy	Hopkinton	Castelar I 29842	Percheron
2278	J. D. Moulton	Hopkinton	Friedland (45001)	Percheron
2419	A. B. Holbert	Greeley	Stuntney Bulbo 888 (9557)	Hackney
2420	A. B. Holbert	Greeley	Blanch Bombey 890 (9554)	Hackney
2421	A. B. Holbert	Greeley	Ely Orel 884 (9209)	Hackney
2422	A. B. Holbert	Greeley	Misty Morn 885 (9344)	Hackney
2423	A. B. Holbert	Greeley	B. B. Crispy 886 (9113)	Hackney
2424	A. B. Holbert	Greeley	Duke of the Hills 882 (9199)	Hackney
2425	A. B. Holbert	Greeley	Priory Prince 887 (9556)	Hackney
2426	A. B. Holbert	Greeley	Stuntney Extradition 883 (9031)	Hackney
2663	Barryville Horse Co.	Ryan	Mercure 24743 (44027)	Percheron
1575	Henry Goodhile	Manchester	J. S. Ricker 37168	Trotter
2565	L. C. Reardon	Hopkinton	Marcara Charming 10837	Clydesdale
2578	John Rosa	Masonville	Perche 26562 16185	Percheron and French Draft
2733	F. L. Carpenter	Almoral Station	Jann de Teny (32016)	Belgian
2801	A. B. Holbert	Greeley	Regulus 43894	Percheron
2927	A. B. Holbert	Greeley	Joubert II (Vol. 12, p. 847)	Belgian

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2488	L. B. Stanger	Hopkinton	Primo 25604 (41596)	Percheron
3016	A. B. Holbert	Greeley	Baron Willerby 889 (8730)	Hackney
1878	Edward Cook	Manchester	Sultan de Kemexhe 2391 (37430)	Belgian
3327	D. W. Barr	Manchester	Dr. Hardie 43521	Trotter
3357	W. A. Lang & Co.	Greeley	Royal King 9770 (10276)	Clydesdale
3457	W. A. Lang & Co.	Greeley	Perfection 48528	Percheron
1049	W. A. Lang & Co.	Greeley	Sceptique 44308 (60627)	Percheron
3571	G. H. Utley	Manchester	Hazlett 29267	Trotter
3573	H. C. Smith	Manchester	Ardell Simmons 38461	Percheron
3655	Thorpe Bros.	Manchester	Grimaux 29511 (45374)	Percheron
3710	W. A. Lang & Co.	Greeley	Aiglon 2898 (41870)	Belgian
3712	W. A. Lang & Co.	Greeley	Fripon de Gammerages 2903 (41263)	Belgian
3713	W. A. Lang & Co.	Greeley	Mouton de Lexhy 2907 (38236)	Belgian
3714	W. A. Lang & Co.	Greeley	Loufogue 2906	Belgian
3715	W. A. Lang & Co.	Greeley	Lillois 2904 (33210)	Belgian
3716	W. A. Lang & Co.	Greeley	Mouton de Bierset 2908	Belgian
3717	W. A. Lang & Co.	Greeley	Philippe 2909 (41894)	Belgian
3718	W. A. Lang & Co.	Greeley	Thomas 2910 (41872)	Belgian
3719	W. A. Lang & Co.	Greeley	Leon de Trop 2905 (41456)	Belgian
3720	W. A. Lang & Co.	Greeley	Garibaldi de Rouvroy 2903	Belgian
3721	W. A. Lang & Co.	Greeley	Bouquet de Dhuy 2900 (39162)	Belgian
3709	W. A. Lang & Co.	Greeley	Aspic 51232 (61814)	Percheron
3708	W. A. Lang & Co.	Greeley	Gourmand 51239 (67885)	Percheron
3707	W. A. Lang & Co.	Greeley	Dubreuil 51236 (61890)	Percheron
3706	W. A. Lang & Co.	Greeley	Cerbere 51234 (62771)	Percheron
3705	W. A. Lang & Co.	Greeley	Etonne 51237 (68563)	Percheron
3704	W. A. Lang & Co.	Greeley	Agrach 51231 (65131)	Percheron
3703	W. A. Lang & Co.	Greeley	Dartagnan 51235 (65756)	Percheron
3701	W. A. Lang & Co.	Greeley	Phine 51240 (63336)	Percheron
3737	A. B. Holbert	Greeley	April 51235 (59683)	Percheron
3736	A. B. Holbert	Greeley	Banqueteur 51236 (62976)	Percheron
3735	A. B. Holbert	Greeley	Caprice 51238 (59096)	Percheron
3734	A. B. Holbert	Greeley	Dore 51239 (64514)	Percheron
3733	A. B. Holbert	Greeley	Prince 51243 (63150)	Percheron
3732	A. B. Holbert	Greeley	Bon Espoie 51237 (63332)	Percheron
3731	A. B. Holbert	Greeley	Monaco 51242 (60100)	Percheron
3730	A. B. Holbert	Greeley	Renault 51244 (63945)	Percheron
3729	A. B. Holbert	Greeley	Imaret 51240 (63355)	Percheron
3727	A. B. Holbert	Greeley	Trotteur 2701 (35938)	Belgian
3726	A. B. Holbert	Greeley	Ivoire de Wicken 2696 (38106)	Belgian
3725	A. B. Holbert	Greeley	Clovis 2693 (41824)	Belgian
3724	A. B. Holbert	Greeley	Bijou de Ter 2692 (33630)	Belgian
3722	A. B. Holbert	Greeley	Garibaldi 2695 (41820)	Belgian
3743	A. B. Holbert	Greeley	Ravin 51477 (68421)	Percheron
3744	A. B. Holbert	Greeley	Stigmate 51446 (66205)	Percheron
3753	A. B. Holbert	Greeley	Brillant de Malaxhe 3033 (41934)	Belgian
3754	A. B. Holbert	Greeley	Insolent 3034 (37386)	Belgian

DELAWARE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3755	A. B. Holbert	Greeley	Narius de Bove 3035 (39240)	Belgian
3756	A. B. Holbert	Greeley	Avenir de Bove 3032	Belgian
3757	A. B. Holbert	Greeley	Tunis 3038	Belgian
3758	A. B. Holbert	Greeley	Renard 3036 (41940)	Belgian
3759	A. B. Holbert	Greeley	Tambour 3037 (41942)	Belgian
3767	A. B. Holbert	Greeley	Soldat 4523	German Coach
3769	A. B. Holbert	Greeley	Fulminate 51466 (66385)	Percheron
3770	A. B. Holbert	Greeley	Marcara 51485 (66464)	Percheron
3771	A. B. Holbert	Greeley	Albain 51479 (66227)	Percheron
3772	A. B. Holbert	Greeley	Lithium 51498 (63937)	Percheron
3773	A. B. Holbert	Greeley	Panhard 51488 (66456)	Percheron
3774	A. B. Holbert	Greeley	Leon 51489 (65542)	Percheron
3775	A. B. Holbert	Greeley	Neptune 51493 (60632)	Percheron
3776	A. B. Holbert	Greeley	Koko 51492 (67810)	Percheron
3777	A. B. Holbert	Greeley	Lubin 51494 (68568)	Percheron
3778	A. B. Holbert	Greeley	Patraque 51491 (65437)	Percheron
3779	A. B. Holbert	Greeley	Kroumir 51490 (65686)	Percheron
3780	A. B. Holbert	Greeley	Marius 51511 (68702)	Percheron
3781	A. B. Holbert	Greeley	Bataclan 51500 (62511)	Percheron
3782	A. B. Holbert	Greeley	Duc 51501 (60024)	Percheron
3783	A. B. Holbert	Greeley	Forban 51508 (66969)	Percheron
3784	A. B. Holbert	Greeley	Darius 51467 (65549)	Percheron
3785	A. B. Holbert	Greeley	Kalidor 51468 (65508)	Percheron
3786	A. B. Holbert	Greeley	Ajose 51469 (66225)	Percheron
3787	A. B. Holbert	Greeley	Orangiste 51470 (68735)	Percheron
3788	A. B. Holbert	Greeley	Rambeau 51472 (68895)	Percheron
3789	A. B. Holbert	Greeley	Magenta 51474 (69129)	Percheron
3790	A. B. Holbert	Greeley	Madere 51475 (67094)	Percheron
3791	A. B. Holbert	Greeley	Petard 51473 (68511)	Percheron
3792	A. B. Holbert	Greeley	Flambard 51495 (55486)	Percheron
3793	A. B. Holbert	Greeley	Robespierre 51481 (65817)	Percheron
3794	A. B. Holbert	Greeley	Polichinette 51482 (67786)	Percheron
3795	A. B. Holbert	Greeley	Framboisy 51483 (65709)	Percheron
3796	A. B. Holbert	Greeley	Lapin 51486 (65185)	Percheron
3797	A. B. Holbert	Greeley	Boulanger 51496 (58992)	Percheron
3799	A. B. Holbert	Greeley	Roitlet 51499 (61904)	Percheron
3800	A. B. Holbert	Greeley	Cuba 51476 (68674)	Percheron
3801	A. B. Holbert	Greeley	Matinal 51477 (65767)	Percheron
3802	A. B. Holbert	Greeley	Brilliant 51487 (68902)	Percheron
3803	A. B. Holbert	Greeley	Zoubec 51510 (66462)	Percheron
3804	A. B. Holbert	Greeley	Bonsfari 51505 (66463)	Percheron
3805	A. B. Holbert	Greeley	Lacepede 51586 (68299)	Percheron
3806	A. B. Holbert	Greeley	Montjoie 51507 (67405)	Percheron
3807	A. B. Holbert	Greeley	Rivarol 51509 (66465)	Percheron
3809	A. B. Holbert	Greeley	Aspect 51484 (66466)	Percheron
3810	A. B. Holbert	Greeley	Boileau 51508 (66469)	Percheron
3811	A. B. Holbert	Greeley	Polyte 51480 (66877)	Percheron
3812	A. B. Holbert	Greeley	Bruyant 51502 (65044)	Percheron
3813	A. B. Holbert	Greeley	Petard 51478 (66833)	Percheron
3814	A. B. Holbert	Greeley	Volombert 51530 (65716)	Percheron
3815	A. B. Holbert	Greeley	Rivoli 51471 (66676)	Percheron
3816	A. B. Holbert	Greeley	Bolero 51525 (66356)	Percheron
3817	A. B. Holbert	Greeley	Robinot 51529 (56255)	Percheron
3818	A. B. Holbert	Greeley	Laghouat 51528 (68305)	Percheron
3819	A. B. Holbert	Greeley	Crack 51527 (68372)	Percheron
3820	A. B. Holbert	Greeley	Colfichet 51526 (61600)	Percheron
3822	A. B. Holbert	Greeley	Stuntney Benedict 1000 (8660)	Hackney
3823	A. B. Holbert	Greeley	Ely Dane 997 (9206)	Hackney
3824	A. B. Holbert	Greeley	Witcham Swell 998 (9986)	Hackney
3825	A. B. Holbert	Greeley	Putney Prospect 999 (9380)	Hackney
3846	A. B. Holbert	Greeley	Major de Gerbehaye 2997 (38598)	Belgian
3845	A. B. Holbert	Greeley	Premus de Vlad 2999 (41918)	Belgian
3844	A. B. Holbert	Greeley	Orpheon de Marais 2998	Belgian
3843	A. B. Holbert	Greeley	Sultan Du Marais 3003	Belgian
3842	A. B. Holbert	Greeley	Hercule de la Dendre 2995	Belgian
3840	A. B. Holbert	Greeley	Sultan de Vlad 3002 (41920)	Belgian

DELAWARE COUNTY—CONTINUED

Cer.t No.	Name of Owner	Postoffice	Name of Stallion	Breed
3839	A. B. Holbert	Greeley	Vainquerur de Ninove 3004 (41924)	Belgian
3838	A. B. Holbert	Greeley	Samson D' Anseghem 3000	Belgian
3835	A. B. Holbert	Greeley	Rentier 4537	German Coach
3834	A. B. Holbert	Greeley	Partner 4535	German Coach
3833	A. B. Holbert	Greeley	Victor 4533	German Coach
3832	A. B. Holbert	Greeley	Reve D' Or 4531	German Coach
3831	A. B. Holbert	Greeley	Recke 4549	German Coach
3830	A. B. Holbert	Greeley	Trojan 4547	German Coach
3829	A. B. Holbert	Greeley	Uhland 4545	German Coach
3828	A. B. Holbert	Greeley	Takt 4543	German Coach
3827	A. B. Holbert	Greeley	Ubier 4541	German Coach
3826	A. B. Holbert	Greeley	Pascha 4539	German Coach
3858	A. B. Holbert	Greeley	Seemann 4591	German Coach
3895	W. A. Lang & Co.	Greeley	Chambol 3113 (31960)	Belgian
3866	W. A. Lang & Co.	Greeley	Millardaire 3116 (41954)	Belgian
3867	W. A. Lang & Co.	Greeley	Milton 3117 (40160)	Belgian
3869	W. A. Lang & Co.	Greeley	Blanc Bec D'Oudoumont 3111	Belgian
3870	W. A. Lang & Co.	Greeley	Bandouin 3109 (41524)	Belgian
3871	W. A. Lang & Co.	Greeley	Ideal 3019	Belgian
3872	W. A. Lang & Co.	Greeley	Zinger 3119	Belgian
3873	W. A. Lang & Co.	Greeley	Forton de Lierde 3115	Belgian
3874	W. A. Lang & Co.	Greeley	Pomme d' Or 3118 (51966)	Belgian
3875	W. A. Lang & Co.	Greeley	Lionel 2577 (41956)	Belgian
3916	A. B. Holbert	Greeley	Stuntney Dunneford 1005 (9910)	Hackney
3915	A. B. Holbert	Greeley	Witcham Gabriel 1006 (9984)	Hackney
3914	A. B. Holbert	Greeley	Stuntney Nigger 1013 (9919)	Hackney
3913	A. B. Holbert	Greeley	Stuntney Changeable 1012 (9909)	Hackney
3912	A. B. Holbert	Greeley	Royal Coronet 1011 (8262)	Hackney
3911	A. B. Holbert	Greeley	Wintringham A. I. 1010 (8338)	Hackney
3919	A. B. Holbert	Greeley	Wood Paragon 1009 (9988)	Hackney
3909	A. B. Holbert	Greeley	Golden Dream 1007 (10036)	Hackney
3908	A. B. Holbert	Greeley	Jack Tar 1003 (10034)	Hackney
3907	A. B. Holbert	Greeley	Amber 1001 (10037)	Hackney
3927	A. B. Holbert	Greeley	King George 1004 (10035)	Hackney
3928	A. B. Holbert	Greeley	Wharram Wanderer 1002 (9971)	Hackney
3955	A. B. Holbert	Greeley	Baron Drege 1449 (25334)	Belgian
4000	A. B. Holbert	Greeley	Diomede 3237	French Coach
4015	I. C. Odell	Greeley	Fox 9605	Shire
4017	A. B. Holbert	Greeley	Greeley 3164	French Coach
4224	A. B. Holbert	Greeley	Golden Dream 3170	Belgian
4192	W. A. Lang & Co.	Greeley	Pachs 2913 (15714)	Belgian
4200	C. H. Hull	Hopkinton	Alcos 47680	Trotter
4187	Geo. B. Lane & Son	Masonville	Duke 50227	Percheron
4186	Geo. B. Lane & Sons	Masonville	Dick 50226	Percheron
4169	Geo. & J. B. Nieman	Earlville	Philiste 2781	French Coach
4168	Geo. & J. B. Nieman	Earlville	Bistouri 53120 (66400)	Percheron
575	W. A. Lang & Co.	Greeley	Sultani 45122 (56900)	Percheron

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
933	W. A. Lang & Co.	Greeley	Captain de Luttre 2232 (Vol. 12, p. 286)	Belgian
4345	A. B. Holbert	Greeley	Jaubert II 3184 (Vol. 12, p. 847)	Belgian
4649	A. B. Holbert	Greeley	Guerdon 51892 (70004)	Percheron
4650	A. B. Holbert	Greeley	Gabon 51879 (70367)	Percheron
4651	A. B. Holbert	Greeley	Galon 51880 (72543)	Percheron
4652	A. B. Holbert	Greeley	Gaspard 51882 (68802)	Percheron
4653	A. B. Holbert	Greeley	Guede 51891 (70561)	Percheron
4654	A. B. Holbert	Greeley	Guerrier 51893 (71865)	Percheron
4655	A. B. Holbert	Greeley	Gaston 51884 (69282)	Percheron
4656	A. B. Holbert	Greeley	Gil-Blas 51887 (69843)	Percheron
4658	A. B. Holbert	Greeley	Gorgias 51890 (70865)	Percheron
4659	A. B. Holbert	Greeley	Gardien 51881 (73218)	Percheron
4660	A. B. Holbert	Greeley	Faubourg 51877 (67736)	Percheron
4661	A. B. Holbert	Greeley	Globeur 51889 (73051)	Percheron
4662	A. B. Holbert	Greeley	Arthus 51875 (66307)	Percheron
4663	A. B. Holbert	Greeley	Enghion 51876 (63643)	Percheron
4664	A. B. Holbert	Greeley	Sagittaire 51894 (62210)	Percheron
4665	A. B. Holbert	Greeley	Geranium 51885 (70045)	Percheron
4666	A. B. Holbert	Greeley	Gildas 51888 (72004)	Percheron
4668	A. B. Holbert	Greeley	Gazon 51930 (71461)	Percheron
4669	A. B. Holbert	Greeley	Frivolite 51939 (73479)	Percheron
4670	A. B. Holbert	Greeley	Risette 51940 (64860)	Percheron
4671	A. B. Holbert	Greeley	Ripolin 51938 (68921)	Percheron
4672	A. B. Holbert	Greeley	Pitray 51937 (66072)	Percheron
4673	A. B. Holbert	Greeley	Lavarette 51936 (68670)	Percheron
4674	A. B. Holbert	Greeley	Gerbillon 51932 (69730)	Percheron
4675	A. B. Holbert	Greeley	Gacheur 51928 (71175)	Percheron
4676	A. B. Holbert	Greeley	Ipeca 51935 (65235)	Percheron
4677	A. B. Holbert	Greeley	Glandōn 51931 (70075)	Percheron
4679	A. B. Holbert	Greeley	Geai 51931 (70075)	Percheron
4680	A. B. Holbert	Greeley	Gabalus 51927 (72281)	Percheron
4681	A. B. Holbert	Greeley	Gerondif 51933 (71645)	Percheron
4682	A. B. Holbert	Greeley	Galerien 51929 (71329)	Percheron
4683	A. B. Holbert	Greeley	Biniou 51925 (63759)	Percheron
4685	W. A. Lang & Co.	Greeley	Negre 3420 (Vol. 15)	Belgian
4686	W. A. Lang & Co.	Greeley	Chambol 3414 (46630)	Belgian
4689	W. A. Lang & Co.	Greeley	Brigand de Piersoulx 3407 (44554)	Belgian
4690	W. A. Lang & Co.	Greeley	Absalon 3406 (Vol. 15)	Belgian
4691	W. A. Lang & Co.	Greeley	Ulysse 3422 (38781)	Belgian
4692	W. A. Lang & Co.	Greeley	Brigand 3409 (42030)	Belgian
4693	W. A. Lang & Co.	Greeley	Fiston de Lillois 3415 (39136)	Belgian
4694	W. A. Lang & Co.	Greeley	Beau Sire 3410 (43268)	Belgian
4695	W. A. Lang & Co.	Greeley	Fleuron de Lierde 3416 (46122)	Belgian
4696	W. A. Lang & Co.	Greeley	Bengali 3411 (44226)	Belgian
4697	W. A. Lang & Co.	Greeley	Vaingueur de Paricke 3424 (41420)	Belgian
4698	W. A. Lang & Co.	Greeley	Calais 3412 (44582)	Belgian
4699	W. A. Lang & Co.	Greeley	Grain d' Or 3417 (Vol. 15)	Belgian
4700	W. A. Lang & Co.	Greeley	Avenir de Piersoulx 3405 (44550)	Belgian
4702	W. A. Lang & Co.	Greeley	Genet 56877 (72335)	Percheron

DELAWARE COTNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4703	W. A. Lang & Co.	Greeley	Mercouer 56881 (66044)	Percheron
4704	W. A. Lang & Co.	Greeley	Gomard 56876 (70537)	Percheron
4706	W. A. Lang & Co.	Greeley	Polydor 56884 (62558)	Percheron
4708	W. A. Lang & Co.	Greeley	Gauber 56875 (69738)	Percheron
4710	W. A. Lang & Co.	Greeley	Gil Blas 56885 (70838)	Percheron
4711	W. A. Lang & Co.	Greeley	Galmard 56878 (69676)	Percheron
4716	W. A. Lang & Co.	Greeley	Mounton Hoze 3526 (42780)	Belgian
4717	W. A. Lang & Co.	Greeley	Laboureur de Ligny 3524 (Vol. 15)	Belgian
4723	W. A. Lang & Co.	Greeley	Margaux 3537 (46336)	Belgian
4725	A. B. Holbert	Greeley	Blondin 3534 (Vol. 15)	Belgian
4726	A. B. Holbert	Greeley	Yprois 3539 (46660)	Belgian
4727	A. B. Holbert	Greeley	Lucas 3536 (46662)	Belgian
4728	A. B. Holbert	Greeley	Nestor 3538 (46670)	Belgian
4729	A. B. Holbert	Greeley	Lion d' Or 3523 (41880)	Belgian
4730	A. B. Holbert	Greeley	Barbu 3509 (46650)	Belgian
4731	A. B. Holbert	Greeley	Bruno 3508 (46646)	Belgian
4732	A. B. Holbert	Greeley	Artos 3506 (46654)	Belgian
4733	A. B. Holbert	Greeley	Sultan de Corte 3531 (Vol. 15)	Belgian
4734	A. B. Holbert	Greeley	Martin Fils 3525 (Vol. 15)	Belgian
4735	A. B. Holbert	Greeley	Cavour 3512 (46648)	Belgian
4736	A. B. Holbert	Greeley	Flatteur 3519 (Vol. 15)	Belgian
4737	A. B. Holbert	Greeley	Pius 3529 (46652)	Belgian
4738	A. B. Holbert	Greeley	Paul de Courtral 3528 (Vol. 15)	Belgian
4739	A. B. Holbert	Greeley	Paul de Moore 3527 (Vol. 15)	Belgian
4740	A. B. Holbert	Greeley	Ceasar de Machelen 3513 (46198)	Belgian
4741	A. B. Holbert	Greeley	Bourbon 3510 (Vol. 15)	Belgian
4742	A. B. Holbert	Greeley	Tiestu de Waressaix 3533 (Vol. 15)	Belgian
4743	A. B. Holbert	Greeley	Sans Peur de Parc 3532 (Vol. 15)	Belgian
4744	A. B. Holbert	Greeley	Captaine du Parc 3514 (Vol. 15)	Belgian
4745	A. B. Holbert	Greeley	Condor de Nazereth 3513 (Vol. 15)	Belgian
4746	A. B. Holbert	Greeley	Brussels 3511 (46658)	Belgian
4747	A. B. Holbert	Greeley	Cesar d' Eecke 3516 (Vol. 15)	Belgian
4748	A. B. Holbert	Greeley	Cognac d' Ans 3517 (41798)	Belgian
4749	A. B. Holbert	Greeley	Tolichon 3521 (43830)	Belgian
4750	A. B. Holbert	Greeley	Apollon 3507 (46656)	Belgian
4751	A. B. Holbert	Greeley	Dick de Bodegnee 3518 (Vol. 15)	Belgian
4752	A. B. Holbert	Greeley	Tigaro d' Astene 3520 (Vol. 15)	Belgian
4755	A. B. Holbert	Greeley	Joubert de Cruys 3522 (Vol. 15)	Belgian
4313	Frank Carpenter	Earlville	Sir Thomas Lipton 6475	Shire
4766	A. B. Holbert	Greeley	Vandale 4935 (2221)	German Coach
4767	A. B. Holbert	Greeley	Schiffer 4923 (2156)	German Coach
4758	A. B. Holbert	Greeley	Uncas 4925 (3218)	German Coach
4769	A. B. Holbert	Greeley	Unfilas 4927 (3219)	German Coach
4770	A. B. Holbert	Greeley	Schusstern 4929 (2148)	German Coach
4771	A. B. Holbert	Greeley	Upright 4931 (2216)	German Coach
4772	A. B. Holbert	Greeley	Visier 4933 (2222)	German Coach
4783	A. B. Holbert	Greeley	Noisetier 51973 (68938)	Percheron
4810	A. B. Holbert	Greeley	Silver Tip 1154 (10530)	Hackney

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4811	A. B. Holbert	Greeley	Fritzalan 1166 (10529)	Hackney
4812	A. B. Holbert	Greeley	An Atheist 1164 (10069)	Hackney
4813	A. B. Holbert	Greeley	Ryedale Evolution 1163 (10406)	Hackney
4814	A. B. Holbert	Greeley	Holme Gentleman 1162 (10536)	Hackney
4815	A. B. Holbert	Greeley	Downham Dash 1167 (10528)	Hackney
4816	A. B. Holbert	Greeley	Dereham Squire 1159 (10172)	Hackney
4817	A. B. Holbert	Greeley	Pymoor Star 1157 (10381)	Hackney
4818	A. B. Holbert	Greeley	Ebberton Surprise 1155 (10531)	Hackney
4819	A. B. Holbert	Greeley	Admiral of the East 1153 (10532)	Hackney
4820	A. B. Holbert	Greeley	Suffolk Pride 1156 (9930)	Hackney
4821	A. B. Holbert	Greeley	Fisherman 1165 (9223)	Hackney
4822	A. B. Holbert	Greeley	Grasshopper 1161 (10535)	Hackney
4823	A. B. Holbert	Greeley	Adalaide Squire 1160 (9083)	Hackney
4824	A. B. Holbert	Greeley	Abbey King 1152 (10046)	Hackney
4390	W. A. Lang & Co.	Greeley	Claize 35858 (52292)	Percheron
1366	Peter Schuster et al	Hopkinton	Baron de Thisnes 1181 (17890)	Belgian
4905	A. B. Holbert	Greeley	Bayard 1188 (10884)	Hackney
2571	Ed. Wm. Cook	Manchester	Porte Drapeau 945 (15818)	Belgian
122	Jones & Hoyt	Manchester	Conway Hercule 878	Belgian
5020	A. B. Holbert	Greeley	Fernando 5029	German Coach
5056	W. A. Lang & Co.	Greeley	Goldzoeker 3741 (46760)	Belgian
5057	W. A. Lang & Co.	Greeley	Pourquoi Pas 3746 (Vol. 15)	Belgian
5058	W. A. Lang & Co.	Greeley	Valseur 3749 (38322)	Belgian
5059	W. A. Lang & Co.	Greeley	Clarion de Segel 3740 (Vol. 15)	Belgian
5060	W. A. Lang & Co.	Greeley	Horseman 3744 (46758)	Belgian
5061	W. A. Lang & Co.	Greeley	Medard 3745 (Vol. 15)	Belgian
5062	W. A. Lang & Co.	Greeley	Robert d' Hannonsart 3747 (42526)	Belgian
5063	W. A. Lang & Co.	Greeley	Gendarme 3742 (46754)	Belgian
5064	W. A. Lang & Co.	Greeley	Acacia 3739 (40620)	Belgian
5065	W. A. Lang & Co.	Greeley	Gayard 59249 (72073)	Percheron
5066	W. A. Lang & Co.	Greeley	Glerin 59239 (70508)	Percheron
5067	W. A. Lang & Co.	Greeley	Davier 59238 (67237)	Percheron
5068	W. A. Lang & Co.	Greeley	Electeur 59244 (68177)	Percheron
5070	W. A. Lang & Co.	Greeley	Guillemet 59237 (73018)	Percheron
5071	W. A. Lang & Co.	Greeley	Tresorier 59235 (65148)	Percheron
5073	W. A. Lang & Co.	Greeley	Colbert 59243 (65965)	Percheron
5074	W. A. Lang & Co.	Greeley	Oleron 59234 (65954)	Percheron
639	Owen S. Duffy	Masonville	Barney's Pride 10831	Clydesdale
5089	J. D. Moulton	Hopkinton	Cromwell 13965	Clydesdale
5192	A. B. Holbert	Greeley	Gentin 3801 (45372)	Belgian
5193	A. B. Holbert	Greeley	Coco 3797 (46802)	Belgian
5195	A. B. Holbert	Greeley	Brutus de Fize 3791 (39738)	Belgian

DELAWARE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5196	A. B. Holbert	Greeley	Espoir de Gentinnes 3799 (Vol. 15)	Belgian
5197	A. B. Holbert	Greeley	Ernest 3798 (Vol. 15)	Belgian
5198	A. B. Holbert	Greeley	Conrad 3796 (46800)	Belgian
5199	A. B. Holbert	Greeley	Modeste de Schoonenberg 3807 (Vol. 15)	Belgian
5200	A. B. Holbert	Greeley	Marius de Schoonen berg 3805 (46815)	Belgian
5201	A. B. Holbert	Greeley	Cristal 3802 (46784)	Belgian
5202	A. B. Holbert	Greeley	Chef 3795 (46788)	Belgian
5203	A. B. Holbert	Greeley	Cambronne 3794 (42536)	Belgian
5204	A. B. Holbert	Greeley	Annibal 3789 (46709)	Belgian
5205	A. B. Holbert	Greeley	Marquis de Mellery 3806 (46736)	Belgian
5206	A. B. Holbert	Greeley	Beau Brin 3799 (Vol. 16)	Belgian
5207	A. B. Holbert	Greeley	General 3800 (46230)	Belgian
5208	A. B. Holbert	Greeley	Cesar 3792 (43726)	Belgian
5209	A. B. Holbert	Greeley	Tambour de Glilin 3808 (Vol. 15)	Belgian
5210	A. B. Holbert	Greeley	Charmant du Jonequoy 3973 (Vol. 15)	Belgian
5211	A. B. Holbert	Greeley	Liegois de Dhuy 3804 (Vol. 15)	Belgian
5224	A. B. Holbert	Greeley	Prince Albert 3785 (13932)	Belgian
5229	W. A. Lang & Co.	Greeley	Gelukman 3743 (46756)	Belgian
1116	P. J. McEnamy	Ryan	Favorite 39151	Percheron
5288	A. B. Holbert	Greeley	Retz 52648 (65507)	Percheron
5289	A. B. Holbert	Greeley	Oblat 52463 (66115)	Percheron
5290	A. B. Holbert	Greeley	Gad 52452 (70141)	Percheron
5291	A. B. Holbert	Greeley	Cupidon 52450 (66139)	Percheron
5292	A. B. Holbert	Greeley	Ecumeur 52452 (69108)	Percheron
5293	A. B .Holbert	Greeley	Davier 52451 (67981)	Percheron
5294	A. B. Holbert	Greeley	Galvert 52454 (72046)	Percheron
5295	A. B. Holbert	Greeley	Caramas 52455 (72560)	Percheron
5296	A. B. Holbert	Greeley	Gaz 52456 (69926)	Percheron
5297	A. B. Holbert	Greeley	Gerondif 52457 (69824)	Percheron
5298	A. B. Holbert	Greeley	Glorieux 52458 (64891)	Percheron
5299	A. B. Holbert	Greeley	Golelet 52459 (69639)	Percheron
5300	A. B. Holbert	Greeley	Grosjean 52460 (72590)	Percheron
5301	A. B. Holbert	Greeley	Harpiste 52462 (74852)	Percheron
5302	A. B. Holbert	Greeley	Palo 52464 (66265)	Percheron
5303	A. B. Holbert	Greeley	Pandore 52465 (67046)	Percheron
5304	A. B. Holbert	Greeley	Pilote 52466 (65699)	Percheron
5305	A. B. Holbert	Greeley	Pinson 52467 (65978)	Percheron

DES MOINES COUNTY

165	Henry Broder	Mediapolis	Major 41821	Percheron
164	Henry Broder	Mediapolis	Alger 23049 (42014)	Percheron
163	Henry Broder	Mediapolis	Fusain 42894 (58230)	Percheron
82	James D. Smyth	Burlington	Entertainer 26774	Trotter
1228	James D. Smyth	Burlington	King Entertainer 0706	Trotter
795	John Sutcliff	Sperry	Selim 8970	French Draft
2251	Henry Heibner	Danville	Hard to Get 1350 (7356)	Shire
2407	Clyde Featherby	Yarmouth	Menominee 8531 (23494)	Shire
2360	J. H. Thie	Middletown	Autumn Haze 21682	Trotter
860	Burlington Percheron Horse Co.	Burlington	Cheri 9319	French Draft
3445	E. W. Romiller	Danville	Clermont 9997	French Draft
3583	J. R. Lamme	Middletown	St. Dillion 38375	Trotter
4093	Chas. Nealey	Danville	Jumbo 34605	Percheron
4719	J. W. Blythe	Burlington	Standpatter 38518	Trotter
4853	J. W. Blythe	Burlington	Bedford 5686	Morgan
5135	Jacob Eversman	Burlington	Gold Mine II 18262	French Draft
5044	C. V. LeBoutillier	Sperry	Ernest Sentinel 47029	Trotter
5141	Chas. Nealey	Danville	Grover 45447	Percheron

DICKINSON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
518	G. B. Wilson	Milford	Ludovicus 6412 (8932)	Percheron
373	J. H. Mills	Lake Park	Ignace 22888 (42345)	Percheron
355	P. S. Mott	Spirit Lake	Trim 32061	Percheron
110	G. R. Bryan	Spirit Lake	Superior 30324	Percheron
181	D. V. Palmer	Lake Park	Red Ensign 18330	Trotter
204	Clark L. Nicol	Milford	Prince of Clayton 4698	Clydesdale
437	G. N. Welch	Milford	King Capoul 38364	Trotter
574	H. H. & B. H. Overhocker	Milford	Verona Matchless 6483	Shire
406	P. Hagerty	Hagerty	Iams' Bon Ton 17443	Percheron
893	F. N. Reese & C. M. Varney	Terril	Talisman 27116 (45621)	Percheron
797	D. V. Palmer	Lake Park	Butor 25152 (44160)	Percheron
2475	Geo. Heldridge	Milford	Radis 29506 (48415)	Percheron
2476	Geo. Heldridge	Milford	Rainbow (8222)	Percheron
2547	Jas. Chapman	Terril	Adrien 29536 (46939)	Percheron
2555	D. V. Palmer	Lake Park	King Moak Jr. 42203	Trotter
2358	E. F. Miller	Milford	Christopher C. 31413	Trotter
2881	Hugh Elliott	Lake Park	Sampson 22284	Percheron
4035	D. V. Palmer	Lake Park	Justin 29671	Percheron
3697	D. V. Palmer	Lake Park	Wrestler Jr. 29323	Trotter
3893	James Chapman	Terril	Heldridge's Midas 5240	Percheron
1045	D. S. Blakey	Spirit Lake	Jacques 29716	Percheron
2491	H. H. Overrocker	Milford	King Edward 6947	Shire
4228	C. F. Hanson	Superior	Prince of Richland 11912	Clydesdale
4208	Henry C. Floss	Terril	Keota Haute 24840	Percheron
4205	Heldridge Bros.	Milford	Silent M. 31415	Trotter
2592	G. P. Wilson	Milford	Black Lad 13512 (48980)	French Draft
4720	J. W. Marks	Lake Park	Pontiac 49845	Percheron
3084	Clarke L. Nichol	Milford	Gironde 40341	Percheron
3091	P. T. Burke	Milford	Brown L. 34543	Trotter
4080	H. U. Arthur & Sons	Spirit Lake	Clovis 27093 (45307)	Percheron
5007	G. M. Pritchard	Terrill	Roland B. 46617	Percheron
5092	Anthony Long	Milford	Keota Sargent 9415	French Draft
1002	Ernie Thomas	Spirit Lake	Silver Moak 40733	Trotter
5172	D. S. Blakey	Spirit Lake	Osceola Pagoda 5992	Shire
5173	G. M. Pritchard	Terrill	Vaillant 46675	Percheron
3895	P. S. Mott	Spirit Lake	Heldridge's Conquest 52410	Percheron
5241	A. E. Bush	Lake Park	Bonning 45045	Percheron
4277	A. D. Steward	Terrill	Cadix 45405	Percheron

DUBUQUE COUNTY

952	M. J. Noonan	Bernard	Croiseur 24675 (45290)	Percheron
953	M. J. Noonan	Bernard	Martial 42724 (60151)	Percheron
954	M. J. Noonan	Bernard	Briard 10794 (12252)	Percheron
1055	Thos. F. Connolly	Bernard	Midnight 44254	Percheron
1249	Jno. Connolly	Bernard	Caesar (60096)	Percheron
1344	Connelly & Kelley	Farley	Goldzil 23277	Trotter
1364	F. P. Kern	Dyersville	Danton 1258 (24346)	Belgian
1453	C. D. Mills	Peosta	Charley M. 17137	Trotter
1465	Jno. Breitbach	Peosta	Militor 29986 (45030)	Percheron
1979	The Cascade Horse Co.	Cascade	Keota Dalrymple 31847	Percheron
1978	The Cascade Horse Co.	Cascade	Jolly 5230	Shire
1977	The Cascade Horse Co.	Cascade	Tam O'Shanter 8018	Clydesdale
2489	J. J. Hittemiller	Dyersville	Tom Sherwood 35157	Trotter
1914	Richardsville & Holy Cross Horse Co.	N. Buena Vista	Sultan Rion 2392 (Vol. 14, p. 483)	Belgian
2617	M. F. Barrett	Cascade	Keota Miteau 18871	Percheron
2618	M. F. Barrett	Cascade	Archer 41143 (60113)	Percheron
2619	M. F. Barrett	Cascade	Spender 43919 (59747)	Percheron
2620	M. F. Barrett	Cascade	Trois-Sous 1444 (25308)	Belgian
2625	Frank Kunkel	Dyersville	Absalom 1551 (21364)	Belgian
2626	Frank Kunkel	Dyersville	Gugus de la Bruyere 1653 (18990)	Belgian

DUBUQUE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2649	Ira Murphy	Dubuque	Baron Nitron 5202 32190	Morgan Trotter
2535	Ben Witter	Specht's Ferry	Herisson 46044 (62164)	Percheron
2823	Farley Belgian Horse Co.	Farley	Belle Face 1254 (12918)	Belgian
2864	Jacob Foxen	Dyersville	Laboureur II 1262 (21720)	Belgian
1886	New Vienna and Petersburg Horse Breeders' Association	Dyersville	Gustave 2475 (34418)	Belgian
940	R. J. Kennedy	Zwingle	Prince II (36894)	Belgian
3356	Dyersville Horse Co.	Dyersville	Courageux 31286 (48933)	Percheron
3502	James Wilson	Farley	Woodrain 41652	Trotter
4033	Petersburg Horse Co.	Farley	Brabander 3112 (51958)	Belgian
4076	Ben Witter	Specht's Ferry	Glencow 49728 (61640)	Percheron
3864	Luxemburg Belgian Horse Breeders' Ass'n	Luxemburg	Gusse de Genly 3015 (34560)	Belgian
3487	Hickory Valley Horse Co.	Dyersville	Eclatant 14800 (6401)	French Draft
4403	John Brietback,	Peosta	Banquet 50787 (58755)	Percheron
4705	Thos. F. Connolly	Bernard	Davoust 56874 (65859)	Percheron
4931	Bernard Timmon	Dyersville	Tringueur 16158 (6392)	French Draft
5316	Dyersville Percheron Horse Co.	Dyersville	Picard 41338 (56042)	Percheron
5349	Henry Thul	Graf	Garcon de Bossierre 1341 (25538)	Belgian
5358	J. E. O'Brien	Farley	Bramhope Bachelor 9211 (20290)	Shire
3808	New Vienna & Dyersville Perch. Horse Co.	New Vienna	Josias 51504 (66166)	Percheron

EMMETT COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
397	Taylor & Kenline Bros.	Wallingford	Highland Dandy 22542	Percheron
297	B. H. Knipe	Armstrong	The Parrot 34862	Trotter
298	B. H. Knipe	Armstrong	Boss 20815	Percheron
862	A. J. White	Estherville	Paul 248	Oldenburg Coach
1011	Mathews & Dundas	Armstrong	Ormeau 22800 (42922)	Percheron
959	Estherville and Superior Horse Co.	Estherville	Ussy 29561	Percheron
1242	J. D. Weir	Huntington	Gallopore 32604	Percheron
371	Robt. West & Walter Willett	Estherville	Cyclone 833	Belgian
863	Robt. & F. L. West	Estherville	Petronius 21143	Percheron
301	Robt. West	Estherville	Pluton II 1209 (21736)	Belgian
2445	Felix Kriebs	Huntington	Bud 11652	French Draft
2777	G. E. Moore	Wallingford	Docile 42910	Percheron
2778	G. E. Moore	Wallingford	Armando 46270	Percheron
2779	G. E. Moore	Wallingford	Pathologist 42202	Trotter
2780	G. E. Moore	Wallingford	Franklin Audubon 38936	Trotter
3092	G. E. Moore	Wallingford	Howard Yorke 40259	Trotter
4041	G. W. Gideen	Emmet Co.	Baron de Sartalard	Belgian
4292	W. H. McClure	Dolliver	King 13722	Clydesdale
4444	E. S. Elsworth Est.	Dolliver	Golden King 13136	Clydesdale
4854	Pat Conlin	Armstrong	Mentor 54555 (58808)	Percheron
1421	J. Kinnard	Estherville	Pythian 3640	French Coach
310	Detlof Reimer	Estherville	Grand Victor 30645	Percheron
4937	Frank Taylor	Wallingford	Porter B. 27755	Percheron
5076	J. T. Houseman	Armstrong	Black Warrior 49907	Percheron
1240	Benoni Trimble	Estherville	Plunger 32603	Percheron
5225	Geo. W. Murray	Estherville	Dardignan 52736 (65864)	Percheron
1241	Ben J. Johnson	Estherville	Khedive 11651	French Draft

FAYETTE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
296	Ashbaugh Bros.	Maynard	Brillando 29729	Percheron
5	J. C. Darnell	Randalia	Kansas King 13813	Percheron
573	R. & L. Oldfather	Arlington	Triomphe (59513)	Percheron
1178	John Peters	Oelwein	Bon Courage 42879 (57093)	Percheron
1208	Belgian Draft Horse Co.	Hawkeye	Plein D'Or 949 (16836)	Belgian
1209	G. A. Wescott	Arlington	Red Stripe 39043	Trotter
1256	J. B. & C. W. Turner	Randalia	Eric 2070 (16702)	Belgian
1296	G. D. Darnall	West Union	Allerian 21724	Trotter
1297	G. D. Darnall	West Union	American Russell 21723	Trotter
1298	G. D. Darnall	West Union	Goldfire 31395	Trotter
1299	G. D. Darnall	West Union	J. A. B. D. 40744	Trotter
1410	Allen Doty	Westgate	Baron 521	German Coach
1687	J. S. McSweeney	Oelwein	Cliquant 31281 (46680)	Percheron
1706	E. L. Nus	Arlington	Brown William 45816	Percheron
1708	E. L. Nus	Arlington	Demblon de Dick (32920)	Belgian
1709	E. L. Nus	Arlington	Botha de Wyn (33298)	Belgian
1981	Westgate Horse Co.	Westgate	Telemaque du Hazoir (28346)	Belgian
1986	Fred Field	Oelwein	Calvado 42500	Percheron
2029	E. L. Nus	Arlington	Big Ben 43401	Percheron
2245	Shaffer & Humphrey	West Union	Vigoureux 27390 (48267)	Percheron
2342	F. W. Keil	Oelwein	Cavalier 16207	Percheron
2068	Henry Reicks	St. Lucas	Martin d'Enixhe 2298 (36640)	Belgian
2524	Waucoma Horse Breeders' Ass'n	Waucoma	Ravault 11285 (3477)	French Draft
2616	Geo. Connell	Fayette	Fanchon 14108 (6279)B	French Draft
1699	J. W. Whitely Horse Co.	Fayette	Leopard of Oakhurst 8455 (21596)	Shire
3080	C. R. Ashbaugh & S. C. Stewart	Maynard	Avalon 45047	Percheron
3137	Gunder Horse Co.	Elgin	Vigoureux 27127 (46915)	Percheron
3160	E. T. Foley	West Union	Leon de Zellick (29564)	Belgian
3214	E. L. Nus	Arlington	Quality 15766	French Draft
3263	J. I. Phillips	Elgin	Marcus 43052	Percheron
3460	H. C. Gosse	Oelwein	Geant de Don 2666 (21912)	Belgian
3504	E. L. Nus	Arlington	Woodford 15275	Percheron
3635	W. E. Howard	Elgin	Pedro 49240	Percheron
4007	L. V. Humphrey	West Union	Voltaire 49243	Percheron
1400	E. U. Farr	Waucoma	Prince Telectable 11831	Clydesdale
4075	Belgian Draft Horse Co.	Hawkeye	Piston de Felny 2753 (40020)	Belgian
747	Oscar Glime	Arlington	Athel 17537	Trotter
4334	Alpha Percheron Horse Co.	West Union	Matelot 51665 (51468)	Percheron
3922	Elgin Belgian Horse Co.	Elgin	Sans Pariel 2210 (29606)	Belgian
2944	Chas. Gabel	Hawkeye	Lunesdale Matchless 6773 (19803)	Shire
4695	John N. Foreman	St. Lucas	Mac Westfall 12812	Clydesdale
4758	J. I. Phillips	Elgin	Polignac 43705	Percheron
4761	J. I. Phillips	Elgin	Menos 4143	French Coach
4841	Toomey & Dwyer	Wadena	Ristori del' Happe 3421 (Vol. 15)	Belgian
5102	R. W. Schug	Hawkeye	King Symbol 49960	Trotter
2821	R. W. Schug	Hawkeye	Stanlaws 4759	Shetland
1707	Barney Schlichte	Waucoma	William Adelbert 7900	Shire
5186	G. E. Pratt	Hawkeye	Alford 9532	Trotter
5309	Clermont Horse Co	Clermont	Fandango 22186	Percheron
3176	Barney Schlichte	Waucoma	Fancy Roy 10433	Clydesdale

FLOYD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
131	G. E. Andree	Charles City	Rene II 21276 (42168)	Percheron
275	Henry Moll	Rockford	Aiglon 26585	Percheron
274	Henry Moll	Rockford	Sampson 31414	Percheron
273	Henry Moll	Rockford	Molke XV 2209	German Coach
694	John Bishop	Nora Springs	Cleanthe Jr. 28127	Percheron
826	Marble Rock Horse Co.	Marble Rock	Bambinos 25024 (43012)	Percheron
1039	Albert Gates	Marble Rock	Hercule 43747 (55020)	Percheron
1306	Fred C. Krueger	Charles City	Durbin 32181	Percheron
1307	Fred C. Krueger	Charles City	New Cut 6900	Shire
1308	Fred C. Krueger	Charles City	General Dewey 2047 (33324)	Belgian
1309	Fred C. Krueger	Charles City	Captain Jr. 1431	French Coach
1310	Fred C. Krueger	Charles City	Intrepide 645	French Coach
1332	Carbeiner & Barber	Marble Rock	Gaston Hemel (15918)	Belgian
1333	Carbeiner & Barber	Marble Rock	Evade de Peponghen 1887 (28074)	Belgian
1672	F. H. Leaman	Rockford	Success 44878	Percheron
1673	F. H. Leaman	Rockford	Voltaire 22526	Percheron
1696	L. M. Smith	Marble Rock	Ferris 25102	Trotter
2362	L. V. Humphrey	West Union	Forton de Zuevy (16362)	Belgian
2595	Fred C. Krueger	Charles City	Latourna 41879	Percheron
2596	Fred C. Krueger	Charles City	LaMont 42155	Percheron
2597	Fred C. Krueger	Charles City	Lavern 42039	Percheron
2598	Fred C. Krueger	Charles City	Voyageur 41599	Percheron
2825	Henry Moll	Rockford	Loubet 48225	Percheron
3565	Wm. Boyer	Charles City	Jay 41881	Percheron
2812	C. M. Anderson	Charles City	Monarch 25428	Percheron
4769	D. W. Nickerson	Marble Rock	Marceau 51322	Percheron
5227	H. E. Lewis	Nora Springs	Navasota 13456	French Draft
5194	C. Jensen	Nora Springs	Jhelmako 3803 (42992)	Belgian
5392	E. E. Sherman	Nora Springs	John A. Donald 11146	French Draft

FRANKLIN COUNTY

1422	West Side Horse Co.	Sheffield	Murrow Free Lance 7752	Shire
1170	C. J. Bigg	Sheffield	Emit Eversole 21620	Trotter
1138	J. S. Mulkins	Hampton	Elder Pom Pom 6599 (19587)	Shire
707	H. H. Marble	Hampton	Foudryeur 2202 (26756)	Belgian
1610	Henry Pralle	Latimer	Keota Allen 5802	Shire
1611	Fahrmann Sons & Paullus	Latimer	Garby 22666 (43490)	Percheron
1637	A. M. Craighton	Hampton	Sir Wilfred 9538	Clydesdale
1758	Chas. Harrison, P. J. Monahan & A. D. Stilson	Hampton	Barbazo (6010)	French Draft
2520	Geo. O'Terrill	Sheffield	Victor 43608	Percheron
2521	J. D. & P. Eslinger	Sheffield	Colin 27551 (48309)	Percheron
2577	J. P. Brown	Hampton	King 22597	Percheron
2695	N. Thomas	Sheffield	Montrave Rupert 10551	Clydesdale
2792	H. W. Iblings	Geneva	Consonant (Vol. 7)	German Coach
2853	H. R. Esslinger	Chapin	Amboy 14330	French Draft
1871	A. C. F. Voy	Ackley	Horbling Shamrock 8664 (23929)	Shire
1945	John P. Peters	Ackley	Volta 50561 (62453)	Percheron
2910	G. H. Washburn	Hampton	Ben Storing 4841	Morgan
3419	N. J. Thomas	Chapin	French Rival 8948	French Draft
4084	N. J. Thomas	Chapin	General 50088	Percheron
4229	J. C. Arends	Alexander	Bilbouquet 22688 (42566)	Percheron
4279	O. E. Benson	Geneva	Carlos 22615	Percheron
4759	Geo. Van Every	Chapin	Coleman Oak 36789	Trotter
4837	Oakwood Farm	Hampton	Stately Guard 43665	Trotter
5181	F. Nancolas	Hampton	Kimberly II 59540	Percheron
5248	S. W. Ferris	Hampton	Arbo 45303	Percheron
5375	Joe H. Smith	Hampton	Letton Boy 39398	Trotter
5377	Chas. H. Roe	Hampton	Norvalwood 36144	Trotter

FREMONT COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
17	L. Chambers	Bartlett	Halle 198	Oldenburg Coach
18	L. Chambers	Bartlett	Sir Jacques 16018	Belgian
19	L. Chambers	Bartlett	Apollo 3247	Shetland
68	Wm. C. Johnson	Randolph	Bob Chariton 31430	Trotter
69	Wm. C. Johnson	Randolph	Roscoe II 19422	Percheron
124	S. A. Chambers, Secy	Anderson	Tullus 214	Oldenburg Coach
154	I. E. Burdick & W. H. Wadell	Farragut	Balanfal 35379	Percheron
240	Lee Meek	Riverton	Roosevelt 33172	Percheron
987	Fred H. Martin	Sidney	Prince 50265	Percheron
1065	Jas. H. Miller	Farragut	Pacifidue 40395 (48534)	Percheron
2153	Pleasant Grove Percheron Horse Co.	Sidney	Sansonnet 41411 (57672)	Percheron
2154	Percheron Knox Horse Co.	Knox	Duguesclin 41422 (57775)	Percheron
3030	Clover Wave Horse Co.	Hamburg	Lilas 40291 (57378)	Percheron
3435	C. W. Dodd	Randolph	King of Iowa 5648	Shire
3892	Frank Sells	Randolph	Mickey 45595	Percheron
4252	R. E. Waderquist	Randolph	Rejouis 54429 (67282)	Percheron
21	Gruber Horse Co.	Farragut	Rosevelt 35683	Percheron
74	Geo. Estes	Tabor	Cyrano (43606)	Percheron
1381	Geo. Dobney	Tabor	Kiaser 26004	Percheron
4948	R. E. Wederquist	Randolph	Munich 3705 (46730)	Belgian
5177	J. O. Driskell	Randolph	Harold 11795	French Draft

GREENE COUNTY

564	Schneider Bros	Grand Junction	Zanoni (25506)	Belgian
9	W. W. Anderson	Scranton	LaPerchie 30869	Percheron
408	Ira Batcheller	Paton	Sound Money 7050	Shire
407	Albert Head	Jefferson	Chief Ambassador 37525	Trotter
1216	L. L. Wright & J. E. Hammar	Scranton	Collegian 41317	Percheron
1397	E. H. Jackson	Jefferson	Constantine 20381	Percheron
1553	Thos. Toyne, Sr.	Adaza	Wayside Tarbroech 9838	Clydesdale
1614	Wm. Grivey	Dana	Breteuil 24815 (44482)	Percheron
1632	Percheron Horse Co.	Jefferson	Marius de Lil 1273 (19784)	Belgian
1626	C. Picht	Churdan	Prince 10236	French Draft
1625	C. Picht	Churdan	Gerant 22351 (42893)	Percheron
1698	Michael Coyne	Jefferson	Admiral Sampson 19976	Percheron
1374	Harry W. Cole	Cooper	Nicodemus 21754	Percheron
2326	F. B. Anderson	Jefferson	Gervais 47758 (55415)	Percheron
2478	G. A. Wiggins	Cooper	King Leopold 862	Belgian
2527	C. A. Flack	Grand Junction	Electeur 50858 (55883)	Percheron
2593	Chas. Holmes	Rippey	Bambin 21263 (41034)	Percheron
2858	Grand Junction Horse Co.	Grand Junction	Bonneval II 32327 (45505)	Percheron
2978	D. W. Holmes	Scranton	Lewiston 33861	Trotter
3008	D. R. Rittgers	Rippey	Echo's Chief 4590 (13026)	Shire
3012	Kendrick Percheron Horse Co.	Scranton	Lambert 44955 (52685)	Percheron
3022	Cornelius Picht	Churdan	Monarch 15404	French Draft
3023	S. D. Newcomb	Adaza	Bleu 2061 (29620)	Belgian
3024	S. D. Newcomb	Adaza	Thomas 14103 (6282)B	French Draft
3218	Joe Bridgett	Jefferson	Guyanolus 42981	Trotter
3251	Peter Renburg	Paton	Robespierre 32336	Percheron
3300	Chas. Holmes	Rippey	Keota Turo 18230	Percheron
3336	W. J. Custer	Jefferson	Domino 12169	French Draft
3465	Foster Bruntlett	Scranton	Keota Ralph 27651	Percheron
3578	L. H. Roberts	Paton	Paton Boy 8716	Shire
3630	Jas. E. Moss	Scranton	Marcus Miller 42031	Trotter
3631	James E. Moss	Scranton	Scranton 42331	Percheron
3242	Harvey Wise	Paton	Puckerup Prince Harold Jr. 8233	Shire
3923	Harvey Wise	Paton	Excelsior 8232	Shire
4059	Chas. James	Jefferson	Porthos VI 809	Belgian
4154	Hatfield & Fleck	Jefferson	Monitor 46074	Percheron
2401	J. W. Hillman	Dana	Cardiff 9918	Clydesdale

GREENE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3322	A. S. Burk	Rippey	Porto de Houtain 1353 (18512)	Belgian
260	C. C. Berclay	Jefferson	Major II 26872	Percheron
4270	E. C. Elmore	Paton	Major de Merchantem 3164 (25492)	Belgian
4373	D. R. Rittgers	Rippey	Cirton Senator 8987 (20519)	Shire
4424	Cedar Percheron Norman Horse Co.	Adaza	Perpolian 47074 (63378)	Percheron
2190	R. A. Schnepp	Jefferson	Dick 16729	Trotter
2066	Jacob Thornton	Jefferson	Artaban de Givry 2282 (Vol. 13)	Belgian
4712	Chas. Long & Son	Churdan	William Taft 55995	Percheron
4713	Chas. Long & Son	Churdan	W. J. Bryan 55996	Percheron
4756	Clipperton Horse Co.	Churdan	Perfection 46076	Percheron
4773	R. N. Flack	Churdan	Monarch 55603	Percheron
4786	Neild & Metzger	Grand Junction	Senitor 51994	Percheron
1770	James Cairns	Scranton	Envoy 28264	Percheron
3647	W. L. Harbaugh	Jefferson	Park 9521	French Draft
5149	Harry E. Cole	Cooper	Romeo 3347 (Vol. 16)	Belgian
5228	L. L. Wright	Scranton	Glorieux 58719 (72721)	Percheron
5335	W. H. Dunbar	Jefferson	Arlington 51083	Percheron
4688	Hartman & Son	Jefferson	Balzac 3405 (42038)	Belgian

GRUNDY COUNTY

892	Clay Township Percheron Horse Co.	Conrad	Touraine 40953	Percheron
1082	O. D. Hilmer	Reinbeck	Histro F. 35686	Trotter
1415	Miller & Shirk	Grundy Center	Bichon 40190 (51206)	Percheron
1427	Felix-Melrose Horse Co.	Conrad	Seduisant 29530 (45257)	Percheron
2007	P. J. Baasch	Conrad	B. Favori 41310	Percheron
2169	M. C. Pattee	Reinbeck	Paul 44695	Percheron
2222	Fred J. Frost	Grundy Center	Prince Cameron 10526	Clydesdale
2221	Fred J. Frost	Grundy Center	All Right 245	Oldenburg Coach
2257	Samuel Deitrick	Conrad	Tomtom (6025)	French Draft
2267	John Tjaden	Wellsburg	Brilliant 30572 ((47001)	Percheron
2042	South Felix Horse Co.	Conrad	Durand 41436 (60779)	Percheron
2757	W. C. Hiatt	Conrad	Negro 46183 (59429)	Percheron
2815	Canotier Percheron Horse Co.	Grundy Center	Canotier 45607 (53890)	Percheron
2847	T. K. Saul	Reinbeck	MacGill 8789	Clydesdale
2912	A. F. Weiss	Reinbeck	Bedford 141	Hackney
3225	Adolph Albert	Reinbeck	Vainqueur (Vol. 12)	Belgian
3285	Chas. Staveley	Reinbeck	Kirkland King 12226	Clydesdale
3366	Fred J. Frost	Grundy Center	Corbett 20356	Percheron
3365	Smith & Fearer	Grundy Center	Hyperion 46619 (52087)	Percheron
3387	Herman Redenius	Dike	Edler (Vol. 7)	Oldenburg Coach
3516	Herman Redenius	Dike	Dauphin 15156 (57653)	Percheron
2044	John Tjaden	Wellsburg	Nestor 41423 (64588)	Percheron
3853	Helmer DeBerg	Dike	Tiers 7302	East Friedland Coach
4044	John Tjaden	Wellsburg	Horace 45261	Percheron
4045	John Tjaden	Wellsburg	Anacharsis 3628	French Coach
4068	Holland Belgian Horse Co.	Holland	Sapeur 48868	Percheron
4101	Melrose & Felix Township Horse Co.	Conrad	Casimir 51827 (58109)	Percheron
4267	John Lister	Conrad	Willis 51405	Percheron
4372	T. W. Huismann	Grundy Center	Sifflot 53988 (65652)	Percheron
4425	Favor Horse Co.	Grundy Center	Favors 35701	Percheron
4426	Frank Snow	Reinbeck	Mahomit George 48185	Percheron
4763	P. J. Baasch	Conrad	B. Conrad 47071	Percheron
4888	John Lister	Conrad	Prince 59017	Percheron
5052	Percheron Horse Co.	Reinbeck	Gazogene 55374 (70361)	Percheron
3212	Helmer De Berg	Dike	Herzuba (Vol. 7)	Oldenburg Coach

GUTHRIE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1091	Hackney Horse Co	Panora	Conroy 633 (8423)	Hackney
1187	J. M. Sheehan	Stuart	Amant 24448 (42918)	Percheron
1203	H. C. Miner	Stuart	Blaisdon Luck 5385 (14992)	Shire
769	Gilman J. Turner	Panora	King Cole 5218	Shire
770	Gilman J. Turner	Panora	Annas 41370 (56958)	Percheron
692	James E. Junk	Stuart	Rocher 40091 (46496)	Percheron
696	Wichita Belgian Horse Co.	Wichita	Brilliant de Hemptinne (15692)	Belgian
572	A. D. Dickey	Jamaica	Eastern Topman 6308	Shire
46	Yale Draft Horse Co.	Yale	Compagnon 1298 (24830)	Belgian
1576	C. B. McGinnis	Casey	Haven's Pride 12534	Clydesdale
47	Yale Draft Horse Co.	Yale	Diamont 11532 (44766)	French Draft
48	I. C. Sheets	Yale	Midday Sun 34656	Trotter
109	J. T. Wasson	Panora	Teddy R. 0627	Trotter
101	Jamaica Horse Co.	Jamaica	Corisier 29485 (45168)	Percheron
1567	J. B. Foltz	Stuart	Adair Medium 31596	Trotter
1598	S. M. Ash	Bayard	Victor Hugo 42976	Percheron
2109	Jas. H. Pearce	Stuart	Lallie 7507	Shire
2118	J. M. McPherson & Son	Stuart	Richard Mac 37313	Trotter
2119	J. M. McPherson & Son	Stuart	McMahon 22174	Percheron
2327	H. A. Saemisch	Jamaica	Flambart 40741 (58618)	Percheron
2612	D. W. Anderson	Bagley	Dewan 41929	Trotter
2613	D. W. Anderson	Bagley	Lextus 41930	Trotter
2668	S. J. Kirkpatrick & F. W. Kading	Casey	Babillard 12924 (53529)P	French Draft
2820	S. B. Keating and J. S. Low	Stuart	Sultan 18400	Percheron
2844	A. E. Colby	Guthrie Center	Shadalmont 25535	Trotter
2893	J. B. Foltz	Stuart	Tartan 12024	Clydesdale
2907	A. G. Sodaberger	Casey	Baron's Hope 12023 (11606)	Clydesdale
2936	Jerry Dewan	Bayard	The Bishop 30326	Trotter
1711	J. F. Maddick	Panora	Massoud 946 (16918)	Belgian
3002	Chas. A. Reed	Menlo	Jocoon 44954	Trotter
3052	Bear Grove Percheron Horse Co.	Bear Grove	Quande Meme 34246 (45888)	Percheron
693	J. F. Armentrout & P. McDaniels	Stuart	Val St. Pair 3184	French Coach
3232	Wilson Bros.	Menlo	Iowa Sphinx Jr. 33654	Trotter
3233	Menlo Horse Co.	Menlo	Pernod 40015 (53570)	Percheron
3239	F. J. Boyd	Menlo	Van Toler 36478	Trotter
3249	Leroy Culbertson	Panora	Black Knight 12663 (13244)	Clydesdale
3302	G. B. Hughes	Bagley	Stuntney Facitus 7937 (22836)	Shire
3440	J. B. Brown	Guthrie Center	Finghall 12568 (13245)	Clydesdale
3449	Pioneer Draft Horse Co.	Guthrie Center	Highland Chieftain 11479	Clydesdale
3477	Elliott Compton	Stuart	Red McKee 42694	Trotter
3648	Wesley Willey	Monteith	Creston Ben 5948	Shire
3896	J. S. Low	Stuart	Servine 15351	French Draft
571	Clayton Miller	Yale	F. Northway 20634	Trotter
3994	Wm. Morgan	Jamaica	Franklin 9631	French Draft
3995	Wm. Morgan	Jamaica	Avenir de Boingt 2754 (40802)	Belgian
3902	Jacob Haupert	Jamaica	Adour 16517	French Draft
3901	A. D. Dickey	Jamaica	Gallant 16519	French Draft
4085	Henry Campbell	Stuart	Kadour 31222 (45167)	Percheron
4110	John Noland	Stuart	Black Acme 13019 (12855)	Clydesdale
4133	C. B. McGinnis	Panora	Couquetier 51369 (65098)	Percheron
4201	J. F. McNama	Casey	King's Pride 9093	Shire
4606	Wm. Morgan	Jamaica	Guerrier 56701 (69358)	Percheron
4927	Herrick & McGinnis	Stuart	Brilliant de Ruyen 3376 (33592)	Belgian

GUTHRIE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3446	Gustave Eckhardt	Casey	Rohan 15856	French Draft
5176	Simp. Reynolds	Guthrie Center	Extra 51423 (68958)	Percheron
5259	Simp. Reynolds	Guthrie Center	Apollo 200	Oldenburg coach

HAMILTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
327	Geo. H. Daniels	Webster City	Phil Frye 42574	Trotter
515	Marion Horse Co.	Stratford	Renard 27115 (45189)	Percheron
499	L. C. Rood	Webster City	Sir William R. 0729	Trotter
115	Naylor & Milburn	Stratford	Sans Gene 40039 (45012)	Percheron
177	E. C. Brewer	Stanhope	Milord (21662)	Belgian
62	E. T. Friedrich	Stratford	Merry Morgan 5032	Morgan
63	S. J. Cottington	Stratford	Commodore 7741	Shire
28	F. C. Ruegnitz	Stratford	Parson 2964	Shetland
581	Belgian Horse Co. of Homer	Stratford	Copian (33172)	Belgian
686	Wall Lake Horse Co.	Jewell	Dessinateur 31050 (46073)	Percheron
631	F. C. Gearhart	Ellsworth	Silver Seal 31379	Trotter
630	F. C. Gearhart	Ellsworth	Distingue 22349 (42854)	Percheron
842	J. C. Cochran	Jewell	Keota Emperor 21670	Percheron
1068	Bendix Olsen	Stanhope	Prince 19179	Percheron
1529	John Ely	Webster City	Aurillac 23066 (44571)	Percheron
1759	Helmick & Son	Webster City	Carlin 27816 (48389)	Percheron
2300	Frank Ross	Blairsburg	Oscar 26933 (45805)	Percheron
2331	Swanson & Rodine	Stratford	Bijouti 1813 (26488)	Belgian
2337	Ward Deffenbaugh	Webster City	Fayette Duluth 1519	Saddler
2463	J. F. & Sam De France	Webster City	King Al 42749	Trotter
2464	J. F. & Sam De France	Webster City	Lerian 44072	Trotter
2756	A. C. Henderson	Williams	Mon Caprice 2620 (25434)	Belgian
100	John T. Omvig	Randall	Torpilleur 27849 (44008)	Percheron
3097	G. W. Pearson	Ellsworth	Chelsea 41930	Percheron
3188	Dennis Murphy	Williams	Black Diamond 24314	Percheron
3189	Dennis Murphy	Williams	Beatem 40667	Percheron
3644	Swanson & Rodine	Stratford	Keota Dan 18214	Percheron
3690	E. S. Pringle	Webster City	Boule du Chenoy (18130)	Belgian
4014	Cottington & Smith	Stratford	Moulton Columbus 5816 (18226)	Shire
1666	Stratford Percheron Horse Co.	Stratford	Grevy 41272 (57201)	Percheron
4198	J. C. Arends	Alexander	Premier 54070	Percheron
4417	Andrew Caruth	Williams	Mouchon III 947 (18178)	Belgian
4490	A. B. Staples	Ellsworth	Orcarlinus 37145	Trotter
785	John Ely	Webster City	Illinois Lad 24044	Percheron
4482	John Ely	Webster City	Direction Jr. 47863	Trotter
4543	Ole E. Peterson	Ellsworth	Beaumont 49619	Percheron
11	Halsne & Co.	Jewell	Diamond Dick 2608	French Coach
1376	Carl Bentson	Jewell	Big Joe 35707	Percheron
4835	Carl Bentson	Jewell	Almer 45748	Trotter
4908	Peter Hove	Stanhope	Adonis 47711	Percheron
4924	F. P. Helmick	Webster City	Gorron 57545 (69396)	Percheron
5131	Belgian Horse Co.	Webster City	Cora d' Op 1193 (Vol. 9)	Belgian
1404	John Jacobson	Jewell	Keota Emperor 22123	Percheron
561	John Jacobson	Jewell	Prince Charming 10801	Clydesdale
5338	C. J. DeFrance	Williams	Nota D. 59395	Trotter

HANCOCK COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
292	A. D. Paine	Kanawha	Amboy 26664	Percheron
238	Belgian Horse Co	Goodell	Coran de Taverne (18218)	Belgian
456	A. Chisek	Garner	Kilburn Prince 9539	Clydesdale
429	L. E. Faber	Miller	Dick Abbot 5331	Shire
641	J. N. Sprole	Garner	DeNavaro 12619	French Draft
1100	Britt Belgian Horse Co.	Britt	Buffalo (16808)	Belgian

HANCOCK COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1131	Klemme Horse Co	Klemme	Styx (24964)	Belgian
1163	W. H. Greimann	Garner	Ajax 1061 (21446)	Belgian
1198	Ed Williams	Kanawha	Ganymede 1198	Clydesdale
1651	Nelson Peterson	Britt	Historian 45173 (59177)	Percheron
2482	Twin Lake Horse Co.	Goodell	Flup 1789 (21832)	Belgian
2755	Orthel Township Horse Co.	Britt	Osprey II 22417	Percheron
2868	P. R. Gilligan	Kanawha	Clampin 22616 (42780)	Percheron
3047	Nels Pederson	Kanawha	Prince 42776	Percheron
1311	E. F. Klein	Britt	Star Abbott 16679	Trotter
3534	Paul Dorow	Crystal Lake	Raven 12634	French Draft
4243	D. M. Conlan	Goodell	Victor 15190	French Draft
2392	Shire Horse Co	Britt	Era 8680 (20468)	Shire
2635	E. F. Klein	Britt	Veritable 27286 (48352)	Percheron

HARDIN COUNTY

337	C. H. Comly	Iowa Falls	Wyatt 4739	Morgan
354	Jos. Caillard	Iowa Falls	Paul 280	Belgian
667	J. T. Glenn	New Providence	Marengo 40159	Percheron
1121	W. A. McBride	Alden	Pluton de Liroux (23044)	Belgian
1145	R. T. Hamilton	Iowa Falls	Moncey 44746 (51661)	Percheron
1426	Rezin Kennedy	Iowa Falls	Coxey 247	Oldenburg Coach
1454	E. H. LaTeer	Alden	Molay 13965 (19095)	Percheron
1455	E. H. LaTeer	Alden	Williams's Brilliant 30176	Percheron
1510	Wheeler & Turner	Iowa Falls	Rustachio 19803	Trotter
1618	D. D. Goodenough	Iowa Falls	Hartington 4237	Trotter
1733	Telko & Sietsema	Ackley	Royal S. 9008	Clydesdale
1782	J. H. Bales	Eldora	Percy Woodside 41028	Percheron
2038	Seward Bros	New Providence	Modell 45589	Percheron
2149	Christ Risse	Hubbard	Keota Lion 7831	Shire
2254	Leo B. Marks	Eldora	Norve A. 0784	Trotter
2255	Leo B. Marks	Eldora	Goldfinder 9701 20320	French Draft and Percheron
712	J. T. Glenn	New Providence	Stuntney Joab 6617	Shire
2636	D. H. Faris	New Providence	Highland Berdell 43387	Percheron
2468	J. E. Bailey	Iowa Falls	Prince Albert 4725	Morgan
2470	J. T. Glenn	New Providence	Anthracite 47226	Percheron
2471	J. T. Glenn	New Providence	St. Ives II 8904 (10333)	Shire
2901	J. B. Fuller	Alden	Jo 41854 (63425)	Percheron
2994	G. F. Howard	New Providence	Sampson Jr. 42905	Percheron
3017	E. S. Ellsworth Estate	Iowa Falls	Lee Roy 45216	Percheron
3018	E. S. Ellsworth Estate	Iowa Falls	Ruvier 45552	Percheron
3078	Fred Gehrke	Alden	Mouron (25496)	Belgian
3098	O. J. Lacey	New Providence	Ussy 14858 (59254)P	French Draft
3096	W. L. Thornton	New Providence	Major L. 42429	Percheron
3095	Bales & Johnston	New Providence	Senator A. 42428	Percheron
3228	Samuel A. Tisher	Alden	Silver 9491 42112	French Draft and Percheron
3367	Anson Miller	Eldora	Willi 4273	German Coach
3362	Eclipse Horse Co.	Ackley	Eclipse 35480	Percheron
3371	Myers Bros.	Whitten	Combre 24026	Percheron
3372	Myers Bros.	Whitten	Keota Benjamin 44752	Percheron
3474	G. G. Pritchard	Alden	Don Alesor 44149	Trotter
3475	Lewis & Pritchard	Alden	Earl of Alden 43471	Trotter
2062	G. F. Pemberton	Iowa Falls	Bismark de Rochefort 2226 (30548)	Belgian
3660	Enoch Warman	Alden	Trouville 46435 (62970)	Percheron
2572	S. O. Welch	Union	Jumbo 9153	French Draft
3746	Robt. Wilkinson	Iowa Falls	William D. 5465	Morgan
4018	J. F. Howard	New Providence	Papillon 42137 (65354)	Percheron
4115	Seward Bros.	New Providence	Abel 47841	Percheron
4257	D. H. Faris & Sons	New Providence	Highland Valma 41825	Percheron
4402	Union Draft Horse Co.	Union	Sultan 26066	Percheron
4546	S. F. Hammer	New Providence	Baldiller 42616	Percheron
4721	J. Ed Bailey	Iowa Falls	Joseph Huse 5594	Morgan
4722	Bales & Hammer	New Providence	Tacoma 42892	Percheron

HARDIN COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4788)	Seward Bros	New Providence	Dude 55627	Percheron
4787	Seward Bros	New Providence	Dandy 55628	Percheron
4889	W. A. McBride	Alden	Kossuth 15590	French Draft
3854	John Gruis	Cleves	Tiro (Vol. 7)	Oldenburg coach
5137	N. Lawton	Alden	Eddie L. 42405	Trotter
5371	D. D. Goodenough	Iowa Falls	Eber D. 46640	Trotter

HARRISON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
531	A. C. Briggs	Missouri Valley	Ben Lawers 1542 (2594)	Clydesdale
532	Missouri Valley and Beebeetown Horse Co.	Missouri Valley	Violent 2877	French Coach
533	Missouri Valley Percheron Horse Co.	Missouri Valley	Arcachon 25050 (45461)	Percheron
534	Beebeetown Percheron Horse Co.	Missouri Valley	Oiseau 31312 (48724)	Percheron
105	C. W. Reed	Woodbine	Mediumwood 19747	Trotter
148	Geo. W. Crewdson	Woodbine	Leo (23586)	Belgian
112	J. T. Smith	Woodbine	Victor 21809	Percheron
320	W. A. Smith	Woodbine	King L. 28814	Trotter
291	D. W. Bennett	Woodbine	Mont-Joie de Ragnies (25572)	Belgian
467	Percheron Horse Co.	Woodbine	Email 31319 (46074)	Percheron
44	J. Knowles	Logan	Paltu 28352	Trotter
468	Coach Horse Co.	Woodbine	Varreville 3284	French Coach
722	C. C. Booth	Little Sioux	Row On 33805	Trotter
814	P. C. McNally	Dunlap	Glenfinlass 35223	Trotter
1369	Cardinal Percheron Horse Co.	Magnolia	Cardinal 24733 (43692)	Percheron
1530	Jas. H. Blackwood	Dunlap	Tronda's Chieftan 10291	Clydesdale
1636	P. C. Stire	Logan	Loxley 40092	Trotter
1752	V. C. Atwell	Little Sioux	Instard 20494	Percheron
2493	F. A. Vore, keeper	Dunlap	Boulanger 24425 (43615)	Percheron
2514	Persia Percheron Horse Co.	Persia	Cadix 25732 (43771)	Percheron
2662	Wm. L. Carr	Logan	Scott 7966	Shire
2842	Pherguson Bros	Dunlap	Fortune 41633	Percheron
3073	S. N. Dale	Logan	West Phallmont 43838	Trotter
3130	Pherguson Bros	Dunlap	Dax 2304 (30738)	Belgian
3456	C. F. Putman	Woodbine	Cartouche 35811	Percheron
4152	E. F. Ogden	Logan	Robert McCaskey 41446	Trotter
4120	F. Hall	Orson	Mignon 46158 (59412)	Percheron
2899	Virgin Kinart	Missouri Valley	Fortune Hunter 20394	Percheron
4316	R. R. Mickle	Kamrar	Hardi de Meerbeke (Vol. 12, p. 646)	Belgian
4346	W. W. Hollenbeck	Logan	Champion II 7866	Shire
4180	Guyett & Son	Woodbine	Marquis de Altre 2400 (37036)	Belgian
4370	Howard N. Brown	Dunlap	Abricot 20481	Percheron
981	Guyett & Son	Woodbine	Corbett 42790	Percheron
4999	C. C. Booth	Little Sioux	Togo 45086	Percheron
4240	A. C. Briggs	Missouri Valley	Bon Dominant 6594 (19371)	Shire

HENRY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
328	Wm. H. Nugen	New London	Edward Bush 35987	Trotter
329	Wm. H. Nugen	New London	Quinton Cross 38154	Trotter
673	O. C. Newbold	Hillsboro	Iowa Jim 11903	Clydesdale
787	Dunham Wright & P. J. Hanks	New London	Kalos 14439	French Draft
851	Ed C. Herron	Mt. Union	Heron de Vryheld 1293 (21346)	Belgian
955	F. W. Walters	New London	Prince Albert 11577	French Draft
899	C. C. Anderson	Mt. Pleasant	Alexander 7218	Shire
1040	Frank A. Bird	Mt. Pleasant	Harm Vandecar 30072	Trotter

HENRY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1081	Maurice Green	Wayland	Arcturus 15798	Trotter
898	C. C. Anderson	Mt. Pleasant	Lord Commodore 8388	Shire
897	C. C. Anderson	Mt. Pleasant	Lord Gentry 8389	Shire
896	C. C. Anderson	Mt. Pleasant	Lord Claymont 7039	Shire
895	C. C. Anderson	Mt. Pleasant	Lord Curzon 7038	Shire
879	H. H. Hills	Mt. Pleasant	Cherreau 42473 (48488)	Percheron
1144	H. H. Hills	Mt. Pleasant	Lucky Cross 10861	Trotter
1143	H. H. Hills	Mt. Pleasant	Fortune Hunter 9202	French Draft
1142	H. H. Hills	Mt. Pleasant	Admiral 33035	Percheron
900	Swedesburg Horse Co.	Swedesburg	Bernard 34307 (53267)	Percheron
1231	Jacob Beckley	Hillsboro	Wayside Smuggler 11857	Clydesdale
1232	Jacob Beckley	Hillsboro	Keota King 19437	Percheron
1226	J. J. O'Laughlin	Rome	Trevoux 12547	French Draft
1322	Mt. Hamil Horse Co.	Hillsboro	Damier 27119 (45993)	Percheron
1424	D. H. McCahan	Mt. Pleasant	Keota Prince 4965	Shire
1525	L. C. Wenger	Wayland	Superb 12507	French Draft
1526	Wenger Bros	Wayland	Fordy Duke 7581 (21432)	Shire
1670	Lee Ernst	Trenton	Nally 10010	French Draft
1828	C. M. Clark	Mt. Pleasant	Cecilian 17563	Trotter
1988	Rudolph & Walter Lund	Winfield	Winifred's Prince 1277	Clydesdale
2138	Ross S. Wright	Mt. Pleasant	Ambassaduer 43068	Percheron
2364	John Schadt	Rome	Keota Knight 8806	Clydesdale
2418	C. C. Anderson	Mt. Pleasant	Lord Roosevelt 8735	Shire
2516	Nelson Cornick	Mt. Pleasant	John 15033	French Draft
2522	Jesse D. Cooper	Winfield	Merriman 5376	Shire
2523	Jesse D. Cooper	Winfield	Javelot 23051 (43301)	Percheron
1788	Jesse D. Cooper	Winfield	Hannibal 41728	Percheron
2564	K. S. Mills	Mt. Pleasant	Gold Eagle 5301	Shire
2584	Wenger Bros	Wayland	Cyrano 50487 (45628)	Percheron
2416	John Shriver	New London	Creston Archie 3d 6650	Shire
2951	C. C. Anderson	Mt. Pleasant	Novice 22614 (43366)	Percheron
2979	H. E. Watts	Salem	Agricole 41318	Percheron
3049	Wm. A. Harshbarger	Mt. Pleasant	Romeo 45175	Percheron
3161	W. P. Blackford	Hillsboro	Stuntney Sanrouge 840 (9033)	Hackney
3162	Jacob Beckley	Hillsboro	King 15626	French Draft
3234	New London Horse Co.	New London	Tyrolien 2460	French Coach
3235	New London Horse Co.	New London	Pomard 24489 (44564)	Percheron
3342	W. A. Tade & Sons	Hillsboro	Rotrou 47082 (61541)	Percheron
3339	H. C. Hampton	Hillsboro	Pat Brown 28280	Trotter
3338	H. C. Hampton	Hillsboro	Joe Diamond 43202	Trotter
3919	O. C. Newbold	Hillsboro	Sir Archibald 12952	Clydesdale
3920	John A. Swan	Winfield	Ethelbert 12025 (12969)	Clydesdale
4001	A. L. Garrels	Mt. Union	Lamy 14853 (53952)	French Draft
4026	J. W. Graber	Salem	De Vallon 14780	French Draft
4069	A. L. Garrels	Mt. Union	Sans Tache (11724)	Percheron
2955	Henry Burky	Mt. Pleasant	Happy Tom 8012	Shire
4427	Everett Beckwith	Mt. Pleasant	Ericeirs 14971	French Draft
4428	Everett Beckwith	Mt. Pleasant	Kewango 15604	French Draft
4429	Everett Beckwith	Mt. Pleasant	Seigneur 51451	Percheron
4483	Ira Redfern	New London	Romu 48007	Percheron
4517	W. V. Amsbaugh	New London	Princetto 36088	Trotter
4571	C. M. Clark	Mt. Pleasant	Clark Boreal 44987	Trotter
4609	Henry E. Watts	Salem	LaGrise 51434	Percheron
4610	Henry E. Watts	Salem	Fureto 51427	Percheron
670	Bird & Dodd	Mt. Pleasant	Becket May Prince 6857 (17149)	Shire
196	Roy H. Barton	Mt. Pleasant	Chartroose 33721 7893	Percheron & French Draft
4896	Geo. C. Wright	Mt. Pleasant	Sir Walter Raleigh 47091	Percheron
1047	Geo. C. Wright	Mt. Pleasant	Orageux 26110 (44842)	Percheron
5038	E. Tulk	Mt. Pleasant	Crip 3379 (46634)	Belgian
5104	Wm. Litzenberg	Mt. Pleasant	Valais 26901 (45841)	Percheron
5239	Joe Metzger	Winfield	Marquette 13567	French Draft
5242	Jacob Beckly	Hillsboro	Garnet's Honor 47496	Trotter

HENRY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5243	Jacob Beckly	Hillsboro	Gen. Dewey 17375	French Draft
5279	G. F. Wilmeth	Salem	Kach Cha 44795	Trotter
5345	W. N. Watson	Hillsboro	Thomas W. Lawson 47850	Trotter
3561	W. N. & J. E. Watson	Hillsboro	Imprint Jr. 33546	Trotter

HOWARD COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
398	P. J. Gesell	Elma	Bonton 9067	French Draft
549	Protivin Percheron Horse Co.	Protivin	Saumur 25031 (43633)	Percheron
138	Keune Horse Co.	Cresco	Talmage 1069	Belgian
827	C. A. L. Loomis	Chester	Wildwoods Ideal 1530	Belgian
828	C. A. L. Loomis	Chester	Black 2221 (29464)	Belgian
997	F. A. Eckstein & Bro.	Chester	Cyclone II 1375	Belgian
998	F. A. Eckstein & Bro.	Chester	Macadam Jr. 1841	Belgian
999	F. A. Eckstein & Bro.	Chester	Ideal Jr. 1840	Belgian
1000	F. A. Eckstein & Bro.	Chester	Maxy 1802 (14698)	Belgian
1001	F. A. Eckstein & Bro.	Chester	Macadam 718	Belgian
1371	Martin Jones	Cresco	Le Meniere (15409)	Percheron
1474	Maple Leaf Belgian Draft Horse Co.	Elma	Paul Max (27498)	Belgian
1645	Clover Leaf Horse Co.	Cresco	Epernon 34916 (46591)	Percheron
53	P. J. Herold	Cresco	Regale 2082	French Coach
2252	Albion Horse Co.	Bonair	Buridan 27105 (48288)	Percheron
2258	T. J. Richards	Lime Spring	Barney Amber 10888	Clydesdale
2259	J. W. Davis & I. Roberts	Lime Spring	Nellie's Pride 11867	Clydesdale
2976	S. A. Converse	Cresco	The Governor 2976	Clydesdale
3013	Geo. Moore	Elma	Trompeur 31248 (48679)	Percheron
3065	Saratoga Horse Co.	Cresco	Libaros 27378 (44813)	Percheron
3509	M. E. Weighill	Cresco	The Fox 34703	Trotter
3581	F. A. Eckstein	Chester	Boulet de Canon 2524	Belgian
4256	F. A. Eckstein	Chester	Epluche 42067 (60521)	Percheron
4541	M. P. Lydon	Cresco	Mac Henry 8878	Clydesdale
2977	D. S. Miller	Bonair	Prince James 8832	Clydesdale

HUMBOLDT COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
90	Brown Bros. & Beck	Humboldt	Cokeril 1800 (29592)	Belgian
200	Harry Bratton	Ottosen	Captain Hopetown 11442	Clydesdale
1189	Rutland Horse Co	Rutland	Pollux II 1371 (18216)	Belgian
1435	Moen & Anderson	Humboldt	Guepin 27159 (44716)	Percheron
1744	Boone Percheron Horse Co.	Renwick	Reflescible 41836 (48870)	Percheron
2359	Brown Bros. & Beck	Humboldt	Major de Corroy 2533 (24426)	Percheron
2360	Brown Bros. & Beck	Humboldt	Corail 14831 (62379)P	French Draft
2433	P. L. DeSmidt	Humboldt	Romance 26395	Percheron
2628	L. E. Dolder	Pioneer	Thomas 34371 (46441)	Percheron
2833	Renwick Shire Horse Co.	Renwick	Stuntney Defiance 2853	Shire
2938	Byron Brink	Renwick	Bob Sheldon 38354	Trotter
3146	A. J. Hayden	Humboldt	LaPerche 45327	Percheron
3483	F. F. Kelling	Humboldt	Tessino (13903)	German Coach
3484	F. F. Kelling	Humboldt	William 1046	German Coach
3163	Belgian Draft Horse Co.	Pioneer	Charlemange 1799 (12290)	Belgian
4097	Brown Bros. & Beck	Humboldt	Black Jack II 9389	Shire
4433	C. E. Myers	Humboldt	Judge Transit 47746	Trotter
4281	A. K. Cleveland	Humboldt	Frank Thornton 45353	Trotter

HUMBOLDT COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3798	A. G. Cooper	Ottosen	Bon-Valet 51497 (59946)	Percheron
4940	Brown Bros. & Beck	Humboldt	Henri 31232 (46732)	Percheron
4941	Brown Bros. & Beck	Humboldt	Stuntney Troutbeck 953 (9928)	Hackney
4942	Brown Bros. & Beck	Humboldt	Richard I 9726 (24564)	Shire
4943	Brown Bros. & Beck	Humboldt	Espagnol 3264 (46590)	Belgian
1865	A. C. Cooper	Ottosen	Stuntney Arsaces (23739)	Shire
5113	R. M. Clark	Livermore	March Admiral 10393 (26863)	Shire
5254	E. C. Fuller	Humboldt	De Land George 9654	Shire
5255	E. A. Loobey	Renwick	Goliath 3024 (33470)	Belgian

IDA COUNTY

95	E. F. Peffer	Battle Creek	Me Lud Conkling 34924	Trotter
130	Holstein Horse Co.	Holstein	Vernis 30421 (46609)	Percheron
167	J. F. Parks	Arthur	Nigrier 44625	Percheron
35	Elmer C. Somers	Ida Grove	Brynes 25936	Trotter
45	J. Y. Crawford	Ida Grove	Creston Prince 35728 10667	Percheron and French Draft
51	John Crawford	Holstein	Marron De Vissoul 1350	Belgian
52	John Crawford	Holstein	Napoleon II 273 (24818)	Belgian
23	Geo. H. Nailer	Battle Creek	Harry 9378	French Draft
26	V. D. Wolcott	Battle Creek	Ibrahine 11520	French Draft
27	V. D. Wolcott	Battle Creek	Du Chaillu 11199	Trotter
83	Arthur Horse Co.	Arthur	Fondant 40141	Percheron
1353	Elmer C. Somers	Ida Grove	El Somero 0754	Trotter
1481	P. McGuire	Holstein	Duke 43554	Percheron
1482	P. McGuire	Holstein	Cinchona 20391	Percheron
1483	P. McGuire	Holstein	T. R. K. 11837	Trotter
1484	P. McGuire	Holstein	Romeo 23495	Percheron
1485	P. McGuire	Holstein	Sweet King 40977	Trotter
1727	Waldo & Ray Clapsaddle	Galva	Alex of Odebolt 11754	Clydesdale
928	Ida Grove Horse Co.	Ida Grove	Danton 1020	Belgian
1731	B. M. Hester	Ida Grove	Black Prince 4324	Shetland
2024	H. P. Rice	Holstein	Monaco 14100	French Draft
2776	Galva Union Horse Co.	Galva	Pianiste 44474 (58181)	Percheron
2088	Galva Horse Co.	Galva	Sasie 46060 (51718)	Percheron
2338	C. A. Shimerda	Battle Creek	Ringmaster Jr. 8417	Shire
2583	F. O. Peterson	Galva	Money Maker 7874	Shire
3370	Geo. F. Nailor	Battle Creek	Perkins 48314	Percheron
3674	A. Sykes	Ida Grove	Olga 22766 (43283)	Percheron
3739	August Hunwardensen	Battle Creek	Golden Era 4601	Morgan
2969	Baxter Bros	Galva	Buffalo 41563 (63938)	Percheron
2589	A. B. Bell	Ida Grove	Wenona Swell 22991	Percheron
4467	J. F. Parks	Arthur	Cardiff 53744	Percheron
3247	Hinds & McCrea	Arthur	Gamway 45286	Trotter
5029	J. H. Pilcher	Ida Grove	James 42654 (66947)	Percheron
2776	Bert E. Buss	Galva	Blaisdon Victor 7110 (29267)	Shire

IOWA COUNTY

125	Draft Horse Co. of Ladora	Ladora	Robert de Lillo (25508)	Belgian
126	Draft Horse Co. of Ladora	Ladora	Caesar de Wodecg (29436)	Belgian
127	Draft Horse Co. of Ladora	Ladora	Keota Edward 29654	Percheron
239	W. V. Hixson	Marengo	Rosemack 10406	Clydesdale
778	Chas. Boland	Williamsburg	Kerzerah 33729	Percheron

IOWA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
865	W. V. Hixson	Marengo	Palmerston 9728	Clydesdale
864	W. V. Hixson	Marengo	Mac Delightful 2d 11314	Clydesdale
973	Henry Wiedemeier	Millersburg	Bon Roister 6065 (17790)	Shire
1028	Millersburg Coach Horse Co.	Millersburg	Eithon 2085	French Coach
1009	Williamsburg Draft Horse Co.	Williamsburg	Piston 829 (13000)	Belgian
871	Samuel E. Harper	Victor	Scott Gamaleon 31292	Trotter
1384	R. M. Wyant	Millersburg	Jay Field's Hasty 36018	Trotter
1405	J. F. Talbot	Williamsburg	Keota Ranford 29656	Percheron
1402	Francis E. Grim	North English	Dewey 5203	Shire
1450	Jacob E. Cox	Williamsburg	Boum 44470 (55162)	Percheron
1451	Jacob E. Cox	Williamsburg	Devinez (57137)	Percheron
1479	John B. Wyant	Marengo	Dandy E. 6817	Trotter
1518	W. H. Spratt	Parnell	Cambushinnie Prince Jr. 10861	Clydesdale
1519	W. H. Spratt	Parnell	Manor Surprise (16800)	Shire
1552	J. H. Schrader	Marengo	Gables Shamrock 6959 (Vol. 25)	Shire
2106	H. F. Lohman	Millersburg	Bayard X 30585 (48326)	Percheron
2509	W. E. Reynolds	Williamsburg	Flashwood 8066	Shire
2601	Koszta Horse Co.	Koszta	Tresor (55352)	Percheron
2204	Ladora Draft Horse Co.	Ladora	Caesar de Merchtem 2588 (36802)	Belgian
2653	Jonas Mantz	Williamsburg	Darius 44456 (51256)	Percheron
2654	Jonas Mantz	Williamsburg	Rival 26903 (45850)	Percheron
2675	A. J. Clark	Ladora	Scipion 41554 (63657)	Percheron
2689	Williamsburg Draft Horse Co.	Williamsburg	Bobby B. 15467	French Draft
2546	G. M. Ocheltree	Victor	Colonel O. 13297	French Draft
2731	Frank X. Conroy	Conroy	Joe Menary 43156	Trotter
2787	W. V. Hixson	Marengo	Baron Clifton 12611	Clydesdale
2789	W. V. Hixson	Marengo	Glenco 13334	Clydesdale
2883	J. P. Gunzenhauser	Williamsburg	Paul 19422	Percheron
2882	J. P. Gunzenhauser	Williamsburg	Julo 2151 (Vol. 12)	Belgian
2752	E. F. McArtor	North English	Nelson 1785	German Coach
1169	Roylander Horse Co.	North English	Roylander 30695	Trotter
2998	Ross J. Miller	North English	Printannier 28744 (47059)	Percheron
3032	Jonas Mantz	Williamsburg	Lord William II 5415	Shire
3057	J. D. Thomas	North English	Patwood 34296	Trotter
3221	A. J. Clark	Ladora	Zoo Zoo B. 36336	Trotter
3286	J. G. Hanson	Williamsburg	The Exquisite 36730	Trotter
3343	W. D. Talbott	Marengo	Keota Hymen 31887	Percheron
3394	E. A. Simmons	Marengo	Coursier 2662 (18156)	Belgian
3416	Geo. Boyer	Victor	Lendit 25059 (42414)	Percheron
3427	Ernest Teggartz	South Amana	Prince of Pleasant Hill 23835	Percheron
3478	Jonas Mantz	Williamsburg	Confidence 795	Belgian
3520	Geo. Schuetterle	Marengo	Faucheur 13072	French Draft
3747	Theo. Moyekens, S. DeRycke and D. Landuyt	Marengo	Picador 28751 (48312)	Percheron
1008	T. J. Burns	North English	Baron Blantyre 9343 (10497)	Clydesdale
3985	John S. Torrence	Victor	Prince Reliable 8710	Clydesdale
4092	John R. Fitzer	Williamsburg	Loosegate Lord 8529 (22550)	Shire
4179	C. W. Voss	Williamsburg	Bury Client 8876 (23112)	Shire
4177	J. E. Cox	Williamsburg	Bryan II 52236	Percheron
4178	J. E. Cox	Williamsburg	Regulus 4089	French Coach
4176	J. E. Cox	Williamsburg	Manage 51877 (63689)	Percheron
4247	Bigler Bros.	Victor	Robin Ensign 11939	Clydesdale
2788	H. T. Bell	Marengo	Dale 12333	Clydesdale
4278	James E. Anderson	Victor	Warren Boy 47534	Trotter
867	T. J. Kilcoin	Victor	Mac Delightful 10759	Clydesdale
4557	Mapledale Draft Horse Co.	Williamsburg	Prince Brilliant 11688	Clydesdale

IOWA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2676	H. T. Bell	Marengo	Julian 44709	Percheron
4880	Thos. O'Rourke	North English	Bill Orueke 13719	Clydesdale
4882	J. H. Fancher	North English	Parnell 12697	Clydesdale
5009	F. X. Conroy	Conroy	Volition 50189	Trotter
5045	F. L. Wilson	Marengo	Brown Ball 40605	Trotter
5048	W. V. Hixson	Marengo	Scot Laddie 13562	Clydesdale
5049	W. V. Hixson	Marengo	Stalwart 13563	Clydesdale
2790	Gust Albert	Ladora	Sefton 12331	Clydesdale
5276	J. H. Reynolds	Williamsburg	Major Crispi 52232	Percheron
5277	J. H. Reynolds	Williamsburg	Remus 52241	Percheron
5285	Robt. N. Edwards	Williamsburg	Macara 13751	Clydesdale
5072	G. F. Propst	Victor	Voltaire 59242 (68187)	Percheron
5275	Christ Teggartz	Williamsburg	Bolivar 53547	Percheron

JACKSON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
375	Comte Percheron Horse Co.	Bellevue	Comte (46493)	Percheron
347	Chris Peterson	Miles	Lapin 30198 (46857)	Percheron
268	D. H. Anderson	Maquoketa	Cyclone 1852	Belgian
267	D. H. Anderson	Maquoketa	Brilliant III 1347	Belgian
266	D. H. Anderson	Maquoketa	Vonmore 22417	Trotter
265	C. D. Krepps & D. H. Anderson	Maquoketa	Woodford Russell 37964	Trotter
251	Cook & Depue	Miles	Coco 11360	French Draft
250	Miles Belgian Horse Co.	Miles	Blanqui de Mellemont (29368)	Belgian
285	Belgian Horse Co.	Bellevue	Bornival 1403 (19204)	Belgian
6	Ely & Robinson	Maquoketa	Monteleone 29178	Trotter
496	John Orr, Sec'y	Maquoketa	Romeo 23077	Percheron
644	Wm. Dunn	Bellevue	Beaudole III 33407 (47831)	Percheron
415	J. C. Dennison	Bellevue	Paralene 35112	Trotter
414	J. C. Dennison	Bellevue	Patrolist 40307	Trotter
786	Wm. F. Meinke	Maquoketa	Ardea 42216	Percheron
1092	J. F. Kunan	Sabula	Sans-Gradin 24731 (44668)	Percheron
1128	J. L. Ripple & W. W. Mayberry	Bellevue	Fenelon 25807	Percheron
1146	Roach Bros.	Preston	Patalma 37916	Trotter
1339	J. L. Hoffman	Lamotte	Bernard (13100)	Belgian
1527	Ed Farley	Preston	Clarion de Loyers 2174 (25506)	Belgian
1599	Jos. Eberle	Spragueville	Grove Paragon 2216 (7334)	Shire
2508	Sabula Belgian Horse Co.	Sabula	Coquet de Mellemont 2345 (Vol. 13)	Belgian
2606	Jno. & George Goepfert	Bellevue	Sir Bolivar 12535	Clydesdale
2716	Lamotte & Swingle Horse Co.	Lamotte	Miramar 31274 (48168)	Percheron
2860	Jerry Broderson	Maquoketa	Champagne 27439 (43154)	Percheron
3110	Geo. S. Flathers	Maquoketa	Dr. Kendall 22713	Trotter
3236	Fred Kelsall	Iron Hills	Bonaparte 19764 (43112)	Percheron
3380	Chas. Chapman	Lamotte	Delateur 14821 (64096)	French Draft
3436	O. E. Barnes	Baldwin	Plantagenet 23200 (44573)	Percheron
3523	Preston Percheron Horse Co.	Preston	Reuil 22707 (43472)	Percheron
3592	Wm. Gibson	Maquoketa	William Gibson 39323	Trotter
3689	Farmers Horse Co	Miles	Bock 45770 (61500)	Percheron
3876	J. C. Dennison	Bellevue	Paral 46729	Trotter
4199	Weber Bros.	Bellevue	Sideram 42563 (65319)	Percheron
4921	R. J. Crawford	Miles	Charlatan d' Hubuaumel 3345 (Vol. 16)	Belgian
5161	A. W. Smith	Maquoketa	Richdale 17570	Trotter
5234	C. L. Keiser	Maquoketa	Chalcon Boy 41847	Trotter
5347	Belgian Up-To-Date Horse Co.	Bellevue	Bistouri 1401 (21786)	Belgian
5400	F. L. Roach	Preston	Caesar 17021	French Draft

JASPER COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
99	James McKenzie	Baxter	Sandy McNab 11211	Clydesdale
341	Newburg Horse Imp. Co.	Newburg	Avril 31348 (46164)	Percheron
352	Lavelleur & Zachary	Prairie City	Aristote 44302 (55655)	Percheron
377	Oscar Wallick	Monroe	Keota Senator 9614	Clydesdale
476	J. W. Munn	Newton	Prince Lucas 14363	Percheron
854	Frank Bruner	Prairie City	Keota-Gallipoli 33459	Percheron
807	C. S. Mershon	Newton	Baladin 29429 (46958)	Percheron
1267	D. C. Gifford Est	Prairie City	Pompee 27986 (46835)	Percheron
1268	D. C. Gifford Est	Prairie City	Dardaghan II 13181	French Draft
1555	Robert Roush	Monroe	Oberlin 19549	Percheron
995	J. P. Taylor	Sully	Twister 20753	Trotter
996	J. P. Taylor	Sully	Twis G. B. 39613	Trotter
1745	I. Coffee	Kellogg	Valeur 768	French Coach
2167	J. J. Whisler	Fairmont	Regal Marconi 39287	Trotter
2189	Eldredge Bros.	Sully	Garnet Wilkes Jr. 43307	Trotter
2324	Chas. Goeke	Baxter	Newton Harold 7649	Shire
2410	M. C. Cramer	Monroe	Arnold M. 15660	Trotter
2459	Gibson West	Baxter	Seducteur 47205	Percheron
2457	Gibson West	Baxter	Wilhelm 23608	Percheron
389	A. D. Gipson & G. C. Butler	Baxter	Lapon 26724 (48351)	Percheron
956	Lavalleur & Taylor	Colfax	Monarch 13475	French Draft
2962	D. A. Moffet	Prairie City	Stanislas 15155 (62729)	French Draft
3061	Livingston Bros.	Monroe	Raymond 41181	Percheron
3179	H. W. Kloping	Newton	Gutemburg 41765 (60023)	Percheron
3202	Johnson & Kingdon	Prairie City	King William 12782	French Draft
3203	Johnson & Kingdon	Prairie City	Motus (56933)	Percheron
3204	Johnson & Kingdon	Prairie City	Newton Victor 6921	Shire
3222	Louie J. Altemeir	Newton	Wenona King 5260	Shire
3376	Margaret Gates	Newton	Newton King 40723	Trotter
2854	J. C. Johnson Imported Horse Co.	Lynnville	Angers 40733 (49304)	Percheron
3535	Sugar Grove Horse Co.	Newton	Degourdi 45878 (65197)	Percheron
4031	Ira Smith	Monroe	Monarch 51801	Percheron
2458	Baxter & Round Grove Horse Co.	Baxter	Victor 47205	Percheron
4095	W. N. Talbot & Son	Sully	Keota Allen 44753	Percheron
4094	W. N. Talbot & Son	Sully	Gold Dust 12997	Clydesdale
4113	Chester Draft Horse Co.	Newberg	The Boss III 5416	Shire
4220	H. G. Bergman	Newton	Sioux Valley Chief 36324	Trotter
4218	H. G. Bergman	Newton	Favori 44998 (57219)	Percheron
4219	H. G. Bergman	Newton	Scott W. 36378	Trotter
4217	H. G. Bergman	Newton	Chicago 46195 (55823)	Percheron
4215	H. W. Klopping	Newton	Turcos 48149	Percheron
4190	Kellogg Belgian Horse Co.	Kellogg	Milton de Lessines 3122 (32634)	Belgian
4188	Baxter & Malbourne Horse Co	Baxter	Caliph (12074)	Clydesdale
4298	Vern Wheeler	Newton	Brompton Boy 6534 (Vol. 24)	Shire
4300	John Laskewitz	Killduff	Keota Lambing 44762	Percheron
4299	Vern Wheeler	Newton	Gondler 3897	German Coach
4318	Oscar Wallick	Monroe	Orphan Boy 12254	Clydesdale
4323	P. H. Vanderwool	Newton	Trepan 32305 (45131)	Percheron
4336	Crawford & Griffin	Newton	Congolais 2814 (34314)	Belgian
4337	Crawford & Griffin	Newton	Neptune 632 (7940)	Hackney
4338	Crawford & Griffin	Newton	Accordeur 41764 (64706)	Percheron
4339	Crawford & Griffin	Newton	Loulaba 50782 (68247)	Percheron
4341	Crawford & Griffin	Newton	Calvados 53737 (68366)	Percheron

JASPER COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4342	Crawford & Griffin	Newton	Citoyon 52748 (69077)	Percheron
4382	C. E. Conley	Prairie City	Allegory 47813	Thoroughbred
1396	John Geisler	Mingo	Plough Boy II 5135	Shire
4873	James Williamson	Baxter	Lycurgus 12233	Clydesdale
581	B. H. Annis	Prairie City	Rex 25630	Percheron
55	B. H. Annis	Prairie City	Watchword Junior 35665	Trotter
2933	Lurt Bros.	Monroe	Arbitrator 47769	Percheron
5011	H. G. Bergman	Newton	Forrest Rose 2290	Saddle Horse
5012	H. G. Bergman	Newton	Valseur 48033 (58495)	Percheron
3463	Kooistra Bros	Lynneville	Monarque 27135 (46788)	Percheron
272	Adam Brunner	Prairie City	Rex 1519 (1618)	German Coach
554	Horace Lavalleur	Colfax	Robert 2098	French Coach
5260	C. L. Trout	Kellogg	Mentor 14805 (61863)	French Draft
5284	E. F. Besser	Newton	Rex Yolo 2495	Saddle Horse
5339	A. F. Sandusky	Kellogg	Wenona Banker II 5725	Shire

JEFFERSON COUNTY

277	E. E. Myers	Packwood	Kilted Lad 3d 10353	Clydesdale
278	E. E. Myers	Packwood	Sully's Jim 44488	Percheron
279	E. E. Myers	Packwood	Reno 12483	French Draft
453	Harlan B. Macy	Pleasant Plain	Maceo 19881	Percheron
638	Batavia Belgian Draft Horse Co.	County Line	Duc II De Montfort 2424 (25232))	Belgian
742	Dr. J. V. Bean	Fairfield	Nebator 37751	Trotter
743	Dr. J. V. Bean	Fairfield	Sphinxceps 40238	Trotter
837	Libertyville Horse Co.	Libertyville	Abner 24261 (44604)	Percheron
901	F. K. Laughlin	Batavia	Governor 6199	Shire
966	John Larson	Fairfield	Junius of Fairfield 38063	Trotter
968	John Larson	Fairfield	Fairfield Short Legs 7262	Shire
967	John Larson	Fairfield	Fairfield Brother Bill 7832	Shire
969	John Larson	Fairfield	Fairfield Bumper 8332	Shire
971	Larson Shire Horse Co.	Fairfield	New Cut President 5705	Shire
1003	Daniel G. Dana	Fairfield	Judge Marshall 25791	Trotter
1220	E. P. Taylor	Fairfield	Romeo 35582	Percheron
1239	J. Lewis McCleary	Libertyville	Leonard 14677	French Draft
1221	E. P. Taylor	Fairfield	Laurent 19126	Percheron
1337	Chas. Stevenson	Veo	Keota Chilicoot 21662	Percheron
1438	Wm. Case & Co.	Fairfield	Capricieux 44459 (53278)	Percheron
1546	J. V. Bean	Fairfield	Bashneermont 5193	Morgan
1622	Sylvester Hadley	Packwood	Marquise 13702	French Draft
1654	Wm. Carmichael	Fairfield	Fred Bee 38946	Trotter
1658	Jas. Carmichael	Fairfield	R. D. Rex 37722	Trotter
1691	J. P. Campbell	Libertyville	Taupin 9022	French Draft
1692	J. P. Campbell	Libertyville	Le Roy 13007	French Draft
1728	Alex Hopkirk	Lockridge	Mark Dupont 10771	French Draft
1808	J. E. Harris	Batavia	Ellerslie of Fairfield 38065	Trotter
1809	J. E. Harris	Batavia	Verjus 13635 (22666P)	French Draft
1810	J. E. Harris	Batavia	Thumper 15014	French Draft
1843	John Larson	Fairfield	Fordy Spark 8446 (23320)	Shire
1994	J. F. Carlson	Lockridge	Monte Marshall 44104	Trotter
2025	John Larson	Fairfield	Admiral Togo II 8445 (22990)	Shire
2026	Julius Crile	Brighton	Champagne 41562 (52403)	Percheron
2243	J. E. Hoffman	Abingdon	Prince Archer 11397	Clydesdale
2427	C. W. Benn	Packwood	Packwood Boy 43791	Trotter
2428	C. W. Benn	Packwood	Wm. Packwood 43834	Trotter
2429	C. W. Benn	Packwood	Dr. Clark 44925	Trotter
2430	C. W. Benn	Packwood	Romulus 22674 (43371)	Percheron
2431	C. W. Benn	Packwood	Paul 40400 (45371)	Percheron
2432	C. W. Benn	Packwood	Skirbeck Squire 6830	Shire

JEFFERSON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2599	E. R. Smith	Fairfield	Parker 2379	Trotter
2504	J. W. Wilson	Fairfield	Sansonnet 12038 (44364)	French Draft
2505	J. W. Wilson	Fairfield	Octavian 6337 (18991)	Shire
2506	J. W. Wilson	Fairfield	J. W. B. 32333	Trotter
2507	Jerry Bates	Fairfield	Jerry May 41239	Trotter
2602	James M. Blakeley	Fairfield	Charles Byron 41480	Trotter
2603	James M. Blakeley	Fairfield	Charleston Jr. 22122	Trotter
2665	J. S. Herald	Fairfield	Latimer 10024	French Draft
2666	J. S. Herald	Fairfield	Matchless 9998	French Draft
2691	Humphrey Bros	Pleasant Plain	Solide 41713 (46710) 15515	Percheron French Draft
2723	Maasdam & Wheeler	Fairfield	Keota Hymen 31887	Percheron
2988	Walton Bros.	Pleasant Plain	King of Perche II 2988	French Draft
2997	W. C. Estes & Co	Packwood	Vulcain 40705 (58882)	Percheron
3009	Nady Bros.	Fairfield	Pyrrhus II 42015	Percheron
3010	Nady Bros.	Fairfield	Lafayette 42014	Percheron
3028	Blogh Bros.	Fairfield	Coquin 14007 (54840)P	French Draft
3029	Blogh Bros.	Fairfield	Artiste 45792 (64460)	Percheron
3076	D. B. Hedge	Fairfield	King 13097	Clydesdale
3139	W. C. Estes & E. A. Heald	Packwood	Fiston De Libenne 2105 (Vol. 12, p. 434)	Belgian
3138	W. C. Estes	Packwood	Oscanion 1532	Belgian
3011	A. D. Reed	Fairfield	Favorite 42011	Percheron
3226	J. L. McCleary	Libertyville	Dewey 15652	French Draft
3285	Jas. M. Blakeley	Fairfield	McLeod 10790	Clydesdale
3442	John Graber	Lockridge	Paupiet 50860 (62255)	Percheron
3636	E. R. Smith	Fairfield	Docile 19435	Percheron
3749	W. M. Goff	Batavia	Bienvenu 21265 (43224)	Percheron
4102	Allen Koons	Batavia	Forton II 2409 (37406)	Belgian
4103	Allen Koons	Batavia	Damocles 42360 (63821)	Percheron
674	J. H. Copeland	Fairfield	Portland 11901	Clydesdale
970	Henry Manhardt	Brighton	Merry Tom 6248	Shire
1842	Henry Manhardt	Brighton	Favorli 50644 (57174)	Percheron
3611	J. P. Campbell	Libertyville	Brownie the Kid 42129	Trotter
2878	C. D. McPherson	Fairfield	Jumbo 27767	Percheron
4354	Henry Rupp	Lockridge	King Tom XIV 9752 (24349)	Shire
4825	E. A. Smith	Lockridge	Prince Holton 11225	Clydesdale
4812	W. M. Goff	Batavia	Gallant of Hotfield 9980 (25219)	Shire
435	John F. Stull	County Line	Keota Sawyer 33440	Percheron
4877	G. B. Parsons	Fairfield	Gregorian 57886 (70312)	Percheron
4884	John Larson	Fairfield	Stuntney Charles II 9748 (23745)	Shire
4898	E. A. Smith	Lockridge	Voltaire 45815 (53899)	Percheron
5098	Harlan D. Macy	Pleasant Plain	Bub Normandy 18134	French Draft
5110	John Watson	Glasgow	Sampson 50691	Percheron
5120	J. H. Adkisson	Batavia	Bon Ax 41194	Trotter
5282	D. J. Johnston	Fairfield	Rex 51158	Percheron
5308	J. P. Campbell	Libertyville	Cassion 57171 (71697)	Percheron
5341	Willia Reno	Batavia	Cissel 1403	Saddle Horse
5399	Nady Bros.	Fairfield	Pilote 57021 (68325)	Percheron

JOHNSON COUNTY

505	G. H. Miller	Iowa City	Dewey 26113 (44243)	Percheron
504	G. H. Miller	Iowa City	Westwulf 6827	Shire
106	F. J. Cochran	Iowa City	Del Chimarch 34572	Trotter
180	Jno. Kelley	Oxford	Avignon 26078 (45016)	Percheron
312	R. E. Jones	Iowa City	Marius 9871 (9678)	Percheron
313	R. E. Jones	Iowa City	Queen's King 23685	Percheron
623	W. F. Lutz	Lone Tree	Conde 11204 16709 (31482)	French Draft Percheron
1314	Whittington & Ulch	Solon	Chieftain Harold 5702 (17251)	Shire
1346	C. E. Colony, Jr	Iowa City	Joker 25007 (44963)	Percheron
1486	C. S. Lucas	Iowa City	Larry Ginter 31998	Trotter
1634	A. E. Barnes	Iowa City	Picador Jr. 11066	French Draft
1749	Brennan Bros	Solon	Canari 1422 (25262)	Belgian
1697	John Eden	Lone Tree	Brutus (243)	French Draft

JOHNSON COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1748	Brennan Bros	Solon	All Black 8293 (23886)	Shire
1720	Jas. Rodgers	Oxford	Phenix 19100	Percheron
2352	Scott Wilson	Iowa City	Lightfoot of Fairfield 36408	Trotter
2354	L. P. Kessler	Iowa City	Keota Superior 9328	Percheron
2355	L. P. Kessler	Iowa City	Victor K. 43665	Percheron
2356	L. P. Kessler	Iowa City	Coledge K. 43666	Percheron
2707	Lue Rohret	Oxford	Nig 33231	Percheron
2090	Lue Rohret	Oxford	Goodenough 34367	Percheron
2810	W. H. Bailey	Iowa City	Marshall Ney 14270	French Draft
1099	W. H. Bailey	Iowa City	Trojus Jr. 12654	French Draft
2915	Lutz & Co	Lone Tree	Chilli 46191 (58076)	Percheron
783	W. H. Bailey	Iowa City	Logan 13311 23717	French Draft
3100	L. W. Harding	Solon	Aegon Proctor 01031	Trotter
3108	Martin Berkey & Son	Iowa City	Bayard De Claquebois 944 (13900)	Belgian
3107	Martin Berkey & Son	Iowa City	Champoreau 32303 (43538)	Percheron
3113	Bert Bell	Iowa City	John the Fifth 0725	Trotter
3206	R. C. Zeller	North Liberty	Colonel 50042	Percheron
3122	The Belgian Horse Co. of Iowa City	Iowa City	Bijou De Bassine 1625 (24882)	Belgian
3207	R. C. Zeller	North Liberty	Comme Vous 46603 (63523)	Percheron
3479	A. Crawford	Lone Tree	Prince Everard 11169	Clydesdale
3480	A. Crawford	Lone Tree	Baron McMasters 11824	Clydesdale
3564	Rhinehart & Wolfe	North Liberty	Meunier 12258 (51469)	French Draft
3632	Wm. Harney	Oxford	Victor 4714	Percheron
3670	Henry Morrow	Iowa City	Lemont 1805	Saddle Horse
3684	Geo. E. Hertz	Solon	Fairfax Chieftain 1817	Belgian
2576	D. J. Berkey & Son	Iowa City	Manea Loyal 6851 (20686)	Shire
3836	Wm. Harney	Oxford	Congo II 391	German Coach
3956	John Eden	Lone Tree	Comet VII 9588	Shire
1070	Frank Navy	Swisher	Cesar 23132 (45449)	Percheron
4109	Geo. E. Hertz	Solon	Dandy Boy 15023	French Draft
3476	Floerchinger Bros	Oxford	Jim S. Patchen 43155	Trotter
4226	J. G. Sterrett	Iowa City	Camille 1539 (25460)	Belgian
4254	Jas. A. Clarke	Iowa City	Dan Hamilton 01061	Trotter
4469	Wm. Boone	Iowa City	Boon 15263	French Draft
4579	W. F. Murphy	Iowa City	Pecos 22898	Trotter
4593	A. J. Hanley	Iowa City	Chief Entertainer 48225	Trotter
4519	Burt Lamphere	Shueyville	Lookeene 31093	Trotter
3548	Geo. Wagner	Oxford	Jovial 26085 (45742)	Percheron
4911	Wm. B. Rarick	Iowa City	Vainqueur 1046 (21590)	Belgian
4968	Sam Fountain	Lone Tree	Marshall Pierre 11205	French Draft
5026	John Lutz	Lone Tree	Bizerte 56695 (66869)	Percheron
5143	W. H. Bailey	Iowa City	Mignon 15264	French Draft
5145	W. H. Bailey	Iowa City	Crown of England 9192 (10332)	Shire
5142	W. H. Bailey	Iowa City	Leander 15266	French Draft
3134	Edward Casey	Iowa City	Teddy 15703	French Draft
5214	Cyrus Orr	Iowa City	Abram 46975	Percheron
5350	E. Edmonds	Lone Tree	Autumn Prince 11825	Clydesdale

JONES COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
12	P. H. Conner	Monticello	Al Platoe 38896	Trotter
950	Fred Heltz	Anamosa	Pictor Drayman 6073	Shire
990	G. H. Bohlken	Monticello	Prince of Quality 10840	Clydesdale
989	G. H. Bohlken	Monticello	Prince Royal 12304	Clydesdale
1043	P. L. Smith	Olin	Marcos B. 41312	Trotter
1154	Geo. B. Colton	Anamosa	Brilliant 32842	Percheron
1238	L. H. Chipman	Anamosa	Titus 1317 (25206)	Belgian
1566	A. J. Beem	Anamosa	Cosaque de Tilly (Vol. 11, p. 439)	Belgian
1585	C. A. Schwab	Oxford Junction	Romeo 11988	French Draft
1584	Onslow Shire Horse Co.	Wyoming	Black Dragon 5583	Shire

JONES COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1784	G. W. Loehr	Anamosa	Dewey 9688	French Draft
1825	G. H. George	Monticello	Marcos Bozzaris 30856	Trotter
1824	G. H. George	Monticello	Substantial 8990	Clydesdale
2633	Monticello Percheron Horse Co.	Monticello	Escargot 23224 (43471)	Percheron
2554	Geo. Oltmans	Scotch Grove	George Junior 40424	Trotter
2840	S. E. Ireland	Anamosa	Ogle Swigert 20771	Trotter
2924	Jas. E. Kegley	Wyoming	Reveil 2083	French Coach
3298	C. E. Bottomstone	Wyoming	Young Roosevelt 11081	Clydesdale
3294	B. L. Hoyt	Scotch Grove	Tipster 35574	Trotter
3306	Larkey & Shimerda	Wyoming	Robert de Glatignes 2046 (19310)	Belgian
3305	Larkey & Shimerda	Wyoming	Jupin de Schoonenberg 2045 (32178)	Belgian
3459	G. H. Bohlken	Monticello	Barney's Best 11309	Clydesdale
3488	Sylvester Miller	Anamosa	Caesar 40845	Percheron
3524	Geo. Watt	Anamosa	Warrior 11723	Clydesdale
3566	John Tompkins	Wyoming	Bonnie Lad 10677	Clydesdale
3621	**Henry Frutchey & Sons**	Martelle	Gold Coin 954	Belgian
3658	Andrew Davidson	Monticello	Prince Charley 10786	Clydesdale
3680	U. J. Shanklin	Anamosa	Molina Pioneer 39913	Trotter
3180	E. E. Prosser	Anamosa	Prosit 2568	Belgian
2863	Folkers Bros.	Monticello	Prefet 2745 (36320)	Belgian
2634	Samuel Pfeil	Monticello	Royal Jap 11849	Clydesdale
4202	Frank Trasker	Wyoming	Bracconier 45237	Percheron
4500	Herbert H. Peck	Anamosa	Picador 46615	Percheron
4512	G. F. Vernon	Olin	Confident III 40625	Percheron
4513	G. F. Vernon	Olin	Iowa Champion III 1597	Belgian
4555	Harry Maurice	Monticello	Golden McGregor 4742	Morgan
4858	E. J. Noble	Monticello	Brown George 11728	Clydesdale
4857	E. J. Noble	Monticello	Heir Apparent 12407	Clydesdale
1961	Wm. J. Corbit	Onslow	Docteur 59520 (61995)	Percheron
4849	Clarence Monroe	Olin	Marky 23932	Percheron
5116	Arthur L. Fairbanks	Monticello	Empire 54073	Percheron
4422	Geo. Holub	Wyoming	Reveille 9078	Shire
4468	J. C. Balster	Scotch Grove	Mac Camon 9608	Clydesdale
5312	Ed. Barber	Wyoming	Europe 15199	French Draft
5361	Wm. Sandhouse	Monticello	Newton Ensign 6920	Shire

KEOKUK COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
620	O. O. Phelps & Geo. Sauer	Hedrick	Magnus of Montomore 7657	Shire
911	F. R. Feltz	Keota	Limoges 13661	French Draft
912	F. R. Feltz	Keota	Wilkie Wilson 35737	Trotter
1579	Wm. Cox	Kinross	Idleton 29618	Trotter
1448	A. L. McClenahan	What Cheer	Keota Chief 5427	Shire
1447	A. L. McClenahan	What Cheer	Gables Monarch 6958 (Vol. 25)	Shire
1449	A. L. McClenahan	What Cheer	Malaga 27852 (44386)	Percheron
1515	Chas. Santee	What Cheer	Capitain 193	German Coach
1590	J. C. Ulin	Delta	Tirelarigot 13039 (51124)	Percheron and French Draft
1591	J. C. Ulin	Delta	Postillon 13743 (53841)	French Draft and Percheron
1608	L. G. Garrett	What Cheer	Toreador 1608	Shire
1677	Keswick Draft Horse Co.	Keswick	Barnfields Lord 6932 (20226)	Percheron
1678	Delta Draft Horse Co. No. 2	Delta	Revolver 22648 (43596)	Percheron
1683	R. H. Schultz	Hedrick	Demon III 25795	Percheron
1729	Corban Utterback	Sigourney	Black Chief 21483	Percheron
1730	Corban Utterback	Sigourney	Sombrun 24283 (43610)	Percheron
1772	W. T. Fancher	South English	Fred E. White 33368	Trotter
1775	Jno. Smith No. 1	Harper	Keota Victor 4639	Shire

KEOKUK COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1776	Jno. Smith No. 1	Harper	Bushman II 6596 (Vol. 24)	Shire
2108	J. F. Priest	Sigourney	Canonier 44747 (57041)	Percheron
718	A. Hall	Keswick	Nobby Allerton 31441	Trotter
2133	Keiser Bros.	Keota	Lawson 11919	Clydesdale
2344	F. M. Fixmer	Harper	Bellero 44304	Trotter
	& J. H. Mc-	Harper	Victor of Elm Park 11712	Clydesdale
2346	F. M. Fixmer			
1565	Dwight Beman Nabb	Delta	Clifford 14287	French Draft
2351	J. E. Wolf & Sons	Hedrick	Major Hope 8413	Clydesdale
2398	R. H. Schultz	Hedrick	Ali 41511 (60307)	Percheron
2399	R. H. Schultz	Hedrick	Piedro 14631	French Draft
2486	A. L. McClenahan	What Cheer	Falcan 43495	Trotter
2495	M. P. Frazier	Richland	Danseur 46192 (59117)	Percheron
2496	M. P. Frazier	Richland	Ramoneur 44450 (52112)	Percheron
2510	J. T. Morton	Thornburg	Sangrador 12373 (51977)	French Draft
2614	J. A. Legg	Sigourney	Tom O'Rourke 13109	Clydesdale
2624	Dwight Beman & J. H. McNabb	Delta	Scott 12288	French Draft
2646	Martin Moland	Richland	Keota Mohland 44759	Percheron
2647	A. J. Ramsey	Richland	Keota Commodore 7989	Clydesdale
2448	Pierce Halferty	Keswick	Jupiter 8880	French Draft
2742	Victor Vercheval	Harper	Docteur 3968	French Coach
2741	Victor Vercheval	Harper	Mouton IV 1231 (21722)	Belgian
910	Victor Vercheval	Harper	Lisieux 13622	French Draft
2746	D. G. Clyde	South English	Hurbert 29024 14214	French Draft and Percheron
2747	D. G. Clyde	South English	Gabels Startling 7122 (Vol. 25)	Shire
2748	D. G. Clyde	South English	Keota Cummins 6191	Shire
2749	D. G. Clyde	South English	Garibaldi 15536 32304 (44600)	French Draft and Percheron
2814	Frank Snakenberg	Delta	Pattelin 25444 (45401)	Percheron
1764	J. F. Barton & W. W. Wilson	What Cheer	Charley Clifton 36819	Trotter
2916	W. A. Seaba	Sigourney	Rossignol 24273 (44330)	Percheron
2999	Samuel Singleton	Richland	Monet 13701 (42482)P	French Draft
3000	Samuel Singleton	Richland	Victor Noir 14506	Percheron
3021	Jno. Smith No. 1	Harper	Dunsby Menestrel 8869 (22304)	Shire
3103	Edward Blattner	Sigourney	Keota Corette 3103	Percheron
3167	W. R. McClune	Keswick	Bluecoat 9043 (18532)	Shire
3182	J. T. Morton	Thornburg	Aubepin 7019 (8383)	Percheron
3120	Singmaster & Sons	Keota	Northern Star II 8584 (22636)	Shire
3422	Singmaster & Sons	Keota	Keota Major 44758	Percheron
3423	Singmaster & Sons	Keota	Prudent 46149 (59079)	Percheron
3617	Singmaster & Sons	Keota	Keota Bostwick 35277	Percheron
3626	Emil Fixmer	Harper	Alert 15950	French Draft
3467	S. H. Kirkpatrick	Kinross	Aleska 9344 (10489)	Clydesdale
3856	L. G. Garrett	What Cheer	Esope 51682 (62538)	Percheron
3905	R. H.. Shultz	Hedrick	Van Raalte 9347 (24840)	Shire
3982	Dexter Eller	Hedrick	Degourdi 42328 (67563)	Percheron
3981	Dexter Eller	Hedrick	Littleport Brown George 9348 (24844)	Shire
4003	Jas. A. Loughridge	Delta	Gaillard 2763	Belgian
4004	Jas. A. Loughridge	Delta	Montagnard 2762	Belgian
585	J. A. Legg	Sigourney	Be Be Sarreguemine 10120	Clydesdale
1797	Richmond Bros.	Sigourney	Vulcain d' Essche 2422 (29602)	Belgian
4114	Clayton Messenger	Keswick	Tobo Walnut 45754	Trotter
1997	A. L. McClannahan	What Cheer	Marquis de Bleret 2388 (35988)	Belgian
2688	Sam Keiser	South English	Negrillon II 15466	French Draft
2964	D. A. Patterson	Hedrick	Curet 41193	Percheron
916	Victor Vercheval	Harper	Alma Samson 5402 (16485)	Shire
4376	Thos. Singmaster	Keota	Procurer 51836 (63131)	Percheron
4377	Thos Singmaster	Keota	Volontaire 51903 (64107)	Percheron

KEOKUK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1417	J. Galbraith	Keswick	Prince Surprise 11054	Clydesdale
3575	W. D. Emery	Delta	Girton Conqueror 5346 (10837)	Shire
2345	J. T. Morton	Thornburg	Rabelais 22626 (43468)	Percheron
1167	J. H. McAllister	South English	Lillie's Prince 11085	Clydesdale
262	A. B. Carlisle	Sigourney	Sans Souci 28972 (42260)	Percheron
5226	Al Brollier	Sigourney	Accuratus 41983	Trotter
5281	F. M. Fixmer	Harper	Charming Prince 12832	Clydesdale

KOSSUTH COUNTY

97	Hinderk Beenken	Germania	Romio 24088	Percheron
91	James Britt	Algona	Wenona Tom 22562	Percheron
660	Burt Shire Horse Co.	Burt	Pride of the West 7285	Shire
991	Ledyard Belgian Horse Co.	Ledyard	Charmeur De Dompire (20868)	Belgian
1304	E. H. Staley	Burt	Hugo Hercules 7477	Shire
1352	T. R. Hanifan	Swea City	Jongleur 948	French Coach
1393	H. P. Rasmussen	Galbraith	Le Roy 11262	French Draft
1471	Lone Rock Horse Breeding Ass'n	Lone Rock	Orleans (25132)	Belgian
1505	C. B. Albright	Algona	King George 5783	Shire
1548	H. G. Wright	Algona	Landsut 1047	French Coach
1726	Swea City Horse Co.	Swea City	Neron 22503 (42858)	Percheron
2102	Belgian Horse Breeder's Ass'n	Whittemore	Beau-Type 1360 (21624)	Belgian
2181	Sam'l Gross & Sons	Titonka	Usedom 8801	German Coach
2213	Akbar Stallion Co	St. Benedict	Akbar 22893 (43600)	Percheron
809	Leonard M. Hart	Sexton	Judge Artus 30008	Trotter
2288	Sam'l Gross & Sons	Titonka	King Gerome 25543	Percheron
2657	Sandscale Victor Horse Co.	Bancroft	Sandscale Victor 5636 (17593)	Shire
2683	E. E. & W. R. Schweitert	Burt	Tom Patch 12439	Clydesdale
2462	Irvington Horse Co.	Irvington	Jeun Brin D'Or 1014 (15232)	Belgian
2710	Sparks Bros.	Algona	Sovereign 48089	Percheron
2727	Whitcomb Ball & Son	Titonka	Provost 5323	Shire
2795	H. A. Paine	Algona	Peter the Great 20321	Percheron
2802	Knutson & Nelson	Swea City	Bambin 18270	Percheron
2819	L. N. Larson	Algona	Major Woodford 42853	Trotter
1785	Albert Reutter	Lone Rock	Arabe 17974 (39208)	Percheron
3027	Hobart Horse Co.	Algona	Manor Society 6826 (19815)	Shire
3064	Geo. A. Stoke	Swea City	Souance 21282	Percheron
3079	A. W. Young	Burt	St. Laurent 10373	French Draft
3144	George Beard	Burt	Stanislas 22881 (43502)	Percheron
3393	C. G. Dourte	Swea City	Stuntney Upstart 1753 (10576)	Shire
3646	James Pedley	Algona	King Robert 12247	Clydesdale
4239	M. C. Mattern	Wesley	Vermouth 23056 (42620)	Percheron
1095	P. W. Reece	Ledyard	Keota Moireau 20212	Percheron
2664	M. C. Mattern	Wesley	Brock 1037 (Vol. 11)	Belgian
830	Jerry Helgens	Burt	General Grant 13332	French Draft
1119	W. F. Mattern	Wesley	Justice M. 8815	Shire
4172	James Wallace	Fenton	Searchlight 11166	Clydesdale
2132	Rake & Hammer	Algona	Vigoureux 28283 (43362)	Percheron
4714	Chas. Breuman	Swea City	Picador 27081 (48365)	Percheron
4778	T. H. Robertson & Co.	Bancroft	Major de Marck 3381 (46640)	Belgian
4779	T. H. Robertson & Co.	Bancroft	Favorite III 10027	Shire
4780	T. H. Robertson & Co.	Bancroft	Gautier 51830 (70210)	Percheron

KOSSUTH COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4781	T. H. Robertson & Co.	Bancroft	Gramont 51895 (69398)	Percheron
4782	T. H. Robertson & Co.	Bancroft	Olivier 51834 (58082)	Percheron
184	H. F. Larsen	Burt	Vic 31915	Trotter
4826	Gross Bros.	Burt	Eveille 56730 (64485)	Percheron
571	W. B. Pratt	Burt	F. Northway 20634	Trotter
4862	Herman Beenken	Germania	Natal 56733 (68593)	Percheron
388	Wm. H. Harrison	Algona	Corneille (29508)	Belgian
741	Hart & Carlson	Sexton	Bon Coeur 23073 (43207)	Percheron
5001	A. H. Sparks	Algona	Rivoli II 46681	Percheron
5002	A. H. Sparks	Algona	Tambour 3596 (46688)	Percheron
4794	Henry Jentz	Algona	Veinard 3589 (Vol. 15)	Belgian

LEE COUNTY

540	C. G. Cline	Fort Madison	Pilmore 35374	Trotter
539	C. G. Cline	Fort Madison	George Green 30700	Trotter
591	Sam'l Glendening	Mount Hamill	Wilton Prince 17745	Percheron
448	W. G. Willard	Fort Madison	Gladiator 43541	Percheron
1540	J. Klopfenstein	West Point	Bellair 31783	Percheron
2193	R. Klinger	Donnellson	Joyeux 25302 (43677)	Percheron
2180	R. Klinger	Donnellson	White Stripe 11496	French Draft
2347	Seth Cook	Mount Hamill	Prospect W. 39138	Trotter
2348	Seth Cook	Mount Hamill	Sirius 17550	Trotter
2945	W. E. Brown & Son	Fort Madison	Dedini 40425 (55357)	Percheron
2946	W. E. Brown & Son	Fort Madison	Riflard 41025 (54926)	Percheron
3309	Theodore Abel	Donnellson	Stuntney Kitchner 6930	Shire
3586	R. E. Hill	LaCrew	Count d'Orf 18402	Trotter
3587	R. E. Hill	LaCrew	Billy Dorf 43441	Trotter
3588	R. E. Hill	LaCrew	Lion 8885	French Draft
1445	R. R. Bullard	Weaver	Confrere 31108 (45929)	Percheron
3698	R. Klinger	Donnellson	Fearless Boy 12198	Clydesdale
1281	J. M. Newboy	Mount Hamill	Brown Wheeler 35519	Trotter
4020	Stephen Holtkamp	Overton	Halpine 45348	Percheron
4019	Stephen Holtkamp	Overton	Riant 48955 (62672)	Percheron
4139	Isidor Link	West Point	Carlo 35002	Percheron
5257	J. L. Beggs	Montrose	Wilmor 8716	Trotter
5272	G. W. Kennedy	Montrose	Royal Nutpicker 45235	Trotter

LINN COUNTY

512	W. J. Henderson	Central City	Mahomet King 7272	Shire
543	S. J. Hagerman & J. A. Abbott	Center Point	Keota Standard 27698	Percheron
512	W. J. Henderson	Central City	Brown William 5721 (17208)	Shire
480	P. C. Boyd	Toddville	Pouliard (24476)	Belgian
544	S. J. Hagerman & J. A. Abbott	Center Point	Dick Rogers 6398	Shire
450	R. L. Minor	Marion	Edison 5078	Shire
451	C. Fisher	Central City	Sulphume 31605	Trotter
446	A. Kinsey	Cedar Rapids	Blythe Ben 6843	Shire
430	David G. McLennan	Marion	Volontaire 27859 (45210)	Percheron
509	Troy Mills Percheron Horse Co.	Walker	Gambetta 22696 (42728)	Percheron
687	Jno. A. Dunn	Central City	Hercules 4166	Morgan
695	W. G. Coppock	Whittier	Colonel Russell 6490	Shire
711	Joe Kvetensky & Jno. Kaplan	Fairfax	Keota-Talbert 33452	Percheron
840	Frank Graver & J. A. Van Fossen	Lisbon	Gabels Thumper 5387 (17357)	Shire
830	Frank Graver & J. A. Van Fossen	Lisbon	St. Blaze 11642	French Draft
1134	West Prairie Percheron Horse Co.	Central City	Sofferino 40147 (43776)	Percheron

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1167	Dell Andrews	Central City	Great Scott 10347	Clydesdale
1251	Cedar Rapids Belgian Horse Co.	Palo	Pirate II 1272 (20620)	Belgian
1357	G. C. Murphy	Walker	Cupid 1357	Percheron
1467	Carl Moore	Central City	Tagus (25504)	Belgian
724	Hiland Horse Co.	Walker	Pantin 29907 (46885)	Percheron
1559	H. M. Shanklin	Waubeek	Huit 2038 (20290)	Belgian
1563	N. D. Harrold	Cedar Rapids	Jacqueminot 40602	Trotter
1686	Bohemian Belgian Draft Horse Co.	Cedar Rapids	Don Carlos (14982)	Belgian
1705	Wolfe Bros. & Gamble	Mount Vernon	Elgin 27025	Percheron
1771	James Thompson	Bertram	Artemus 8593	Clydesdale
2083	W. L. DeClow	Cedar Rapids	Mirabeau 41037 (57698)	Percheron
2082	W. L. DeClow	Cedar Rapids	Botha II 2283 (Vol. 13, p. 327)	Belgian
2080	W. L. DeClow	Cedar Rapids	Ami de Givry 2281 (Vol. 13, p. 847)	Belgian
2079	W. L. DeClow	Cedar Rapids	Caesar de Sagelsem 2885 (Vol. 13, p. 624)	Belgian
2078	W. L. DeClow	Cedar Rapids	Garibaldi 2286 (Vol. 14, p. 347)	Belgian
2077	W. L. DeClow	Cedar Rapids	Hercule d'Oost 2287 (37386)	Belgian
2076	W. L. DeClow	Cedar Rapids	Minos 2290 (Vol. 13, p. 327)	Belgian
2075	W. L. DeClow	Cedar Rapids	Beinfait du Kat (Vol. 13, p. 330)	Belgian
2074	W. L. DeClow	Cedar Rapids	Christophe de Jeneffe 2293 (Vol. 13, p. 497)	Belgian
2073	W. L. DeClow	Cedar Rapids	Conquerant 2292 (37410)	Belgian
2072	W. L. DeClow	Cedar Rapids	Gustave 2294 (Vol. 13, p. 762)	Belgian
2071	W. L. DeClow	Cedar Rapids	Mirliton 2295 (Vol. 13, p. 902)	Belgian
2070	W. L. DeClow	Cedar Rapids	Jeannot de Beauvior 2288 (Vol. 14, p. 420)	Belgian
2069	W. L. DeClow	Cedar Rapids	Sapeur 2299 (Vol. 14, p. 347)	Belgian
2067	W. L. DeClow	Cedar Rapids	Monarque 2297 (37412)	Belgian
2065	W. L. DeClow	Cedar Rapids	Ardent 2230 (Vol. 13, p. 431)	Belgian
2064	W. L. DeClow	Cedar Rapids	Max de Zonne 2296 (37388)	Belgian
2063	W. L. DeClow	Cedar Rapids	Mouton Du Val 2289 (Vol. 13, p. 594)	Belgian
2061	W. L. DeClow	Cedar Rapids	Tambour De Hal 2223 (24238)	Belgian
2060	W. L. DeClow	Cedar Rapids	Pierrot Du Hazior 2225 (20304)	Belgian
2059	W. L. DeClow	Cedar Rapids	Coquelin 2222 (Vol. 12, p. 511)	Belgian
2058	W. L. DeClow	Cedar Rapids	Pedro 2224 (Vol. 12, p. 687)	Belgian
2057	W. L. DeClow	Cedar Rapids	Fanchon 41119	Percheron
2055	W. L. DeClow	Cedar Rapids	Volcan 41711 (64121)	Percheron
2054	W. L. DeClow	Cedar Rapids	Vanneau 41712 (64117)	Percheron
2053	W. L. DeClow	Cedar Rapids	Partout 41432 (60430)	Percheron
2052	W. L. DeClow	Cedar Rapids	Transvaalein 41431 (60718)	Percheron
2051	W. L. DeClow	Cedar Rapids	Tropique 41430 (62178)	Percheron
2050	W. L. DeClow	Cedar Rapids	Pomard 41429 (60647)	Percheron
2047	W. L. DeClow	Cedar Rapids	Robinson 41426 (58144)	Percheron
2046	W. L. DeClow	Cedar Rapids	Magnifique 41425 (61952)	Percheron
2043	W. L. DeClow	Cedar Rapids	Musele 41437 (63624)	Percheron
2041	W. L. DeClow	Cedar Rapids	Ginglard 41435 (65036)	Percheron
2040	W. L. DeClow	Cedar Rapids	Roland 41433 (62949)	Percheron
2039	W. L. DeClow	Cedar Rapids	Ardent 41434 (60651)	Percheron
2151	W. L. DeClow	Cedar Rapids	Gouverneur 2227 (26046)	Percheron
2199	E. H. Knickerbocker	Fairfax	Vital 2002 (37156)	Belgian

LINN COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2201	E. H. Knickerbocker	Fairfax	Ecrassant 2591 (36070)	Belgian
2202	E. H. Knickerbocker	Fairfax	Louis de Terhaegen 2595 (35196)	Belgian
2203	E. H. Knickerbocker	Fairfax	Elmer de Lierde 2592 (Vol. 14, p. 809)	Belgian
2205	E. H. Knickerbocker	Fairfax	Titus 2600 (Vol. 13, p. 511)	Belgian
2206	E. H. Knickerbocker	Fairfax	Dilon de Silly 2590 (Vol. 13, p. 401)	Belgian
2208	E. H. Knickerbocker	Fairfax	Theo 2601 (Vol. 13, p. 512)	Belgian
2209	E. H. Knickerbocker	Fairfax	Brillant de Questenne 2584 (Vol. 13, p. 609)	Belgian
2607	J. I. Williams	Troy Mills	Bienvenu de Bougnies 2317 (Vol. 15)	Belgian
2678	J. F. Johnson	Cedar Rapids	Clericus 17969	Trotter
2706	Allen Bros.	Marion	Alesor 16399	Trotter
1164	V. Lacock	Springville	Fleury 15809 (32215)	Percheron
2785	W. L. DeClow	Cedar Rapids	Boron 2631 (32530)	Belgian
2794	Jno. W. Altmyer	Central City	Border Wilkes 29022	Trotter
2839	Jos. Simanek	Walker	District 45796 (64193)	Percheron
2961	W. W. Vaughn	Marion	Gendarme 43404	Percheron
2981	Lewis Payton	Walker	Japan 29333	Thoroughbred
3031	C. L. Jordan	Central City	Questionneur 2005	French Coach
3077	Jno. W. Altmyer	Central City	Chadwick C. 33798	Trotter
392	G. C. Murphy	Walker	Red Cloud M. 34335	Trotter
2056	W. L. DeClow	Cedar Rapids	Echo 41710 (63190)	Percheron
3293	Geo. K. Wenig	Cedar Rapids	Johnny G. 43414	Trotter
3375	John Fairley	Marion	Domino Noir 912 (11254)	Belgian
3415	Joe Baker Jr.	Fairfax	Augerau (48813)	Percheron
3458	J. W. Griffith	Cedar Rapids	Warboys Liberal 3367	Hackney
3527	E. W. Penly	Waubeek	Arnold Onward 34409	Trotter
436	W. A. Hutchinson	Central City	Quality 5190	Clydesdale
3889	E. H. Knickerbocker & Son	Fairfax	Pollux 3100 (38576)	Belgian
3888	E. H. Knickerbocker & Son	Fairfax	Colonel de Genly 3080 (38856)	Belgian
3887	E. H. Knickerbocker & Son	Fairfax	Pauliac 3099	Belgian
3896	E. H. Knickerbocker & Son	Fairfax	Marquis de Lierde 3096 (41946)	Belgian
3885	E. H. Knickerbocker & Son	Fairfax	Philippe d'Her 3098	Belgian
3884	E. H. Knickerbocker & Son	Fairfax	Baron de Wattines 3078	Belgian
3883	E. H. Knickerbocker & Son	Fairfax	Vado 3125 (21458)	Belgian
3882	E. H. Knickerbocker & Son	Fairfax	Sous-Off 42391 (65566)	Percheron
3881	E. H. Knickerbocker & Son	Fairfax	Franjous 42387 (65106)	Percheron
3880	E. H. Knickerbocker & Son	Fairfax	Briscard 42386 (67701)	Percheron
3879	E. H. Knickerbocker & Son	Fairfax	Troubadour 42392 (66731)	Percheron
3878	E. H. Knickerbocker & Son	Fairfax	Quo Vadis 42390 (65794)	Percheron
3960	B. F. Alsop	Sylvia	Bijou 3140 (18398)	Belgian
3979	Edwin Heaton	Fairfax	Grillon 42396 (67536)	Percheron
3980	Edwin Heaton	Fairfax	Bidel 42393 (68708)	Percheron
4009	A. M. Van Steenberge	Fairfax	Maurice 3903 (32694)	Belgian
4011	A. M. Van Steenberge	Fairfax	Franconi de Sinnes 3087 (30470)	Belgian
4012	A. M. Van Steenberge	Fairfax	Bakau 3079 (40880)	Belgian
4013	A. M. Van Steenberge	Fairfax	Souvenir de Mullem 3102 (25900)	Belgian
1171	C. S. & F. C. Nichols	Walker	Pomard 1457 (25408)	Belgian
4162	A. M. Van Steenberge	Fairfax	Expres 3084 (Vol. 14, p. 643)	Belgian
4158	A. M, Van Steen-			

LINN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
	berge	Fairfax	Elie 3083 (39116)	Belgian
4159	A. M. Van Steenberge	Fairfax	Supberbe de la Fontaine 3101 (Vol. 14, p. 411)	Belgian
4160	A. M. Van Steenberge	Fairfax	Armac de Lierde 3076 (Vol. 14, p. 809)	Belgian
4161	A. M. Van Steenberge	Fairfax	Marin 3094 (41584)	Belgian
4126	A. M. Van Steenberge	Fairfax	Milton Solt 3092 (41362)	Belgian
4124	A. M. Van Steenberge	Fairfax	Orange II de Vels 3097 (Vol. 14, p. 433)	
4125	A. M. Van Steenberge	Fairfax	Louis Bogaerden 3091 (34792)	
4234	Lewis Heins	Cedar Rapids	Happy Jack 5189	Shetland Pony
4222	Harris & Atz	Marion	Calwell 42267	Trotter
3711	D. G. McLennan	Marion	Brave Tout 2899 (Vol. 15, p. 586)	Belgian
4221	A. M. Van Steenberge	Fairfax	Dragonde Solre 3081 (40170)	Belgian
4216	D. G. McLennan	Marion	Admiral 51758	Percheron
4235	Lewis Heins	Cedar Rapids	Brilliant IV 19648	Percheron
4271	P. Newcomb	Cedar Rapids	Aegon Boy 47674	Trotter
1732	Geo. M. Plumly	Springville	Hercules 32843	Percheron
1987	C. E. Tuttle	Cedar Rapids	Irgos 20033	Percheron
3133	Fred Leverett	Lisbon	George Arthur 15704	French Draft
4367	A. M. Van Steenberge	Fairfax	Leon de Zellick 3090 (41664)	Belgian
2783	J. H. Smith & Sons	Cedar Rapids	Eclaieur 15312	Belgian
1674	E. H. Knickerbocker	Fairfax	Negus 30580 (45360)	Percheron
4481	Edwin Bittle	Lisbon	Maple Lee 53963	Percheron
4464	F. E. Hann	Marion	Ora Pensas 47960	Trotter
4492	Allen Bros.	Marion	Will Todd 47798	Trotter
4502	Lewis Heins	Cedar Rapids	Perfection 41231	Percheron
4518	R. M. Peet	Viola	Success 20317	Percheron
4258	J. A. Hart	Viola	Perfection II 46971	Percheron
4572	S. J. Hagerman	Center Point	Keota Redland 35262	Percheron
264	Geo. Alsop	Sylvia	Kermet 35303	Trotter
656	E. H. Knickerbocker	Fairfax	Billey Dugan 44251	Percheron
4795	A. M. Van Steenberge	Fairfax	Espoir de Ghorain 3580 (45690)	Belgian
4796	A. M. Van Steenberge	Fairfax	Brutus V. 3576 (Vol. 15)	Belgian
4797	A. M. Van Steenberge	Fairfax	Jaco 3583 (Vol. 15)	Belgian
4798	A. M. Van Steenberge	Fairfax	Botha de Lierde 3575 (Vol. 15)	Belgian
4799	A. M. Van Steenberge	Fairfax	Jean de Boussart 3584 (Vol. 15)	Belgian
4800	A. M. Van Steenberge	Fairfax	Mathieu de Louzelles 3585 (Vol. 15)	Belgian
4801	A. M. Van Steenberge	Fairfax	Dragon de Terhaegen 3578 (Vol. 15)	Belgian
4802	A. M. Van Steenberge	Fairfax	Garibaldi 3581 (Vol. 15)	Belgian
4803	A. M. Van Steenberge	Fairfax	Cadet de Lauzellas 3577 (40372)	Belgian
4804	A. M. Van Steenberge	Fairfax	Aguila 3574 (38738)	Belgian
4805	A. M. Van Steenberge	Fairfax	Muret 3586 (43170)	Belgian
4806	A. M. Van Steenberge	Fairfax	Espoir de Herinnes 3579 (Vol. 15)	Belgian
4807	A. M. Van Steenberge	Fairfax	Pepin de Thor 3588 (42738)	Belgian
4808	A. M. Van Steenberge	Fairfax	Hercule de Renaix 3582 (42684)	Belgian
3124	H. Eastlack	Lisbon	Trottoir 47068 (64018)	Percheron
4832	J. F. Moore	Troy Mills	Aramis de Glabais 1017 (18220)	Belgian

LINN COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4963	J. D. & T. L. Wolfe	Mt. Vernon	Ivanhoe 43248	Percheron
4970	A. M. Van Steenberge	Fairfax	Empire 3756 (Vol. 15)	Belgian
4971	A. M. Van Steenberge	Fairfax	Cyrille 3755 (40494)	Belgian
4972	A. M. Van Steenberge	Fairfax	Cesar de Stabroock 3754 (46300)	Belgian
4973	A. M. Van Steen berge	Fairfax	Robert de Goyck 3763 (Vol. 15)	Belgian
4974	A. M. Van Steenberge	Fairfax	Fil d' Or 3757 (45502)	Belgian
4975	A. M. Van Steenberge	Fairfax	Honneur 3750 (42120)	Belgian
4976	A. M. Van Steenberge	Fairfax	Neptune 3716 (39144)	Belgian
4977	A. M. Van Steenberge	Fairfax	Hercule d' Audenaeken 3759 (47716)	Belgian
4978	A. M. Van Steenberge	Fairfax	Prosper 3762 (45018)	Belgian
4979	A. M. Van Steenberge	Fairfax	Marcel de Goyck 3760 (Vol. 15)	Belgian
596	Mrs. Margaret C. Dows	Cedar Rapids	Star Denmark (Falk's) 2905	Saddle Horse
880	A. D. Washburn	Walker	Ramiur 22000 (41503)	Percheron
5159	Michael McGrath	Marion	Grand Duke 34174	Percheron
818	S. G. Shaffer	Center Point	Satyr 41462	Trotter
4809	Farmers' Belgian Horse Co.	Marion	Major de Questenne 3587 (45102)	Belgian
777	Ira E. Ondler	Coggon	Volage 48578 (55179)	Percheron
5314	Allen Bros.	Marion	The Baritone 37601	Trotter
5333	E. J. Brown	Center Point	Jasper E. 35910	Trotter
5362	N. H. Stockey	Palo	Gamaleon 52451 (70346)	Percheron

LOUISA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
13	S. C. Foster	Columbus Junct.	Dick Crockett 29751	Trotter
216	Johnston Bros	Columbus Junct.	Chiloe 40861 (51387)	Percheron
217	Johnston Bros	Columbus Junct.	Ribi 40857 (53279)	Percheron
524	David Sheriden	Oakville	Jongleur 24497 (44219)	Percheron
455	W. W. Wagner	Letts	Bataclan 21264 (43368)	Percheron
733	D. H. Westbrook	Letts	Fly On 28469	Trotter
794	W. J. Henderson	Morning Sun	Conway Confidence II 1230	Belgian
978	C. V. Le Boutillier	Morning Sun	E. R. J. 27241	Trotter
979	J. T. Carithers	Morning Sun	Brilliant IV. 1598	Belgian
1025	Wapello Horse Co	Wapello	Elder Champion II 6595	Shire
1026	Columbus City Horse Co.	Columbus Junct.	Keota Enoch 12369	French Draft
1107	Nicholas Stamm	Letts	Bambin 16688 (34654)	Percheron
1195	L. F. McColm	Letts	Sir Lionel 10080 (10647)	Clydesdale
1777	W. W. Wagner	Letts	Lord Aesop 43058	Trotter
1796	Chas. Estle	Letts	Honni 24549 (44679)	Percheron
1791	D. E. Barrick	Morning Sun	Young Allerio 41025	Trotter
1984	W. W. Wagner	Letts	Ratanhia 7992 (38139)	Percheron
2184	J. G. Stafford	Morning Sun	Keota Illuminator 31889	Percheron
2185	J. G. Stafford & Frank Okell	Morning Sun	Coco 45491 (52333)	Percheron
2349	Herman Vollmer	Wapello	Silver Tom 28876	Percheron
2394	Jno. W. Jarvis	Morning Sun	Dori de Leez 2177 (31158)	Belgian
3528	Concord Horse Co	Columbus Junct.	Nectar 47088 (58404)	Percheron
2110	T. W. Hendrickson & Griffith Davis	Columbus Junct.	Earl L. 44479	Trotter
3589	Nicholas Stamm	Letts	Plumet 48451	Percheron
3748	Chester Prindle	Oakville	Erma 48627	Percheron
3751	W. J. Henderson	Morning Sun	Deeping Buscot 9200 (24795)	Shire

LOUISA COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3752	W. J. Henderson	Morning Sun	Martin de Connin 2429 (31316)	Belgian
1329	Lyman Ogier	Morning Sun	Sebastopol 50220 (58286)	Percheron
4142	Chester Prindle	Oakville	Stick 52479 (66004)	Percheron
4266	J. G. Stafford	Morning Sun	Romer 47708	Percheron
4332	James H. Letts	Letts	Atora 32046	Trotter
4481	Henrickson & Davis	Columbus Junct.	Intrepid 830	French Coach
4531	M. P. McKoewn	Letts	Suggers Coeur de Lion 9410 (21882)	Belgian
2680	C. E. Latta	Columbus Junct	Cap Sheaf II 43245	Percheron
5107	C. E. Latta	Columbus Junct	Germain 53155	Percheron
5108	C. E. Latta	Columbus Junct	Dongon 48862	Percheron
5109	C. E. Latta	Columbus Junct	Brilliant 55424	Percheron
5168	Metzger Bros.	Wyman	Diavolo 29432 (45249)	Percheron
5263	J. G. Stafford	Morning Sun	Coco 52333	Percheron
5264	J. G. Stafford	Morning Sun	Brilliant 47709	Percheron
5265	Frank Okell	Morning Sun	Ian 52328	Percheron
5269	Jas. H. Letts	Letts	Closier 53354 (67994)	Percheron
5356	S. C. Foster	Columbus Junct.	Dick Crockett Jr. 50404	Trotter
5370	D. H. Westbrook	Letts	Comet 48256	Percheron
5393	Trites & Spitznogle	Oakville	Anneau d' Or 3640 (40030)	Belgian
5413	C. E. Latta	Columbus Junct.	Bismark 46830	Percheron

LUCAS COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
227	G. W. Dillman	Derby	Rosco 9705	French Draft
332	E. F. Brown	Russell	Black Foxy 4636	Morgan
81	E. F. Brown	Russell	Onus Black Hawk 5001	Morgan
80	E. F. Brown	Russell	Morgan King 4817	Morgan
600	James Brown	Chariton	Pipelet 27113 (43904)	Percheron
599	Chas. R. Kirk	Chariton	Nisus 31745 (45921)	Percheron
597	Chas. R. Kirk	Chariton	Hargrave Tom 7597	Shire
732	Kinmouth Bros.	Russell	Stuntney Napoleon 8367 (22826)	Shire
734	W. H. Householder	Chariton	Walter Dewey 31721	Trotter
886	David Q. Storie	Chariton	Norwil Jr. 36013	Trotter
885	David Q. Storie	Chariton	Sam Swift 26575	Trotter
1101	H. D. Vawter	Chariton	Attractive Lad 10611	Clydesdale
1387	Daniel T. Tice	Russell	Tanner 11453	French Draft
1388	Daniel T. Tice	Russell	Bertrand 40116	Percheron
1429	W. W. Clore	Lucas	Conway Banker 6150	Shire
1430	W. W. Clore	Lucas	Tom Seevers 42154	Percheron
887	David Q. Storie	Chariton	Saunemin 23473	Percheron
1740	W. E. Johnson	Russell	Colin 28133 (48116)	Percheron
1742	N. M. Pierce	Russell	Admiral 40657	Percheron
1743	N. M. Pierce	Russell	Cormenon 16390 (24126)	Percheron
2160	Chas. R. Kirk	Chariton	Rivoli 41420 (62516)	Percheron
2159	Chas. R. Kirk	Chariton	Hugo 41410 (60247)	Percheron
2157	Chas. R. Kirk	Chariton	Vernoy 41413 (61891)	Percheron
2156	Chas. R. Kirk	Chariton	Castin 41416 (57619)	Percheron
2178	E. F. Brown	Russell	Onus Foxy 5000	Morgan
2177	E. F. Brown	Russell	Star Foxy 5163	Morgan
2176	E. F. Brown	Russell	Black Hawk Eclipse 5000	Morgan
2175	E. F. Brown	Russell	Foxy Eclipse 5011	Morgan
2174	E. F. Brown	Russell	Tony Foxy 5013	Morgan
2173	E. F. Brown	Russell	Black Diamond 5162	Morgan
2273	I. G. Chapman	Derby	Prince Gallant 6121	Clydesdale
2274	I. G. Chapman	Derby	Hyperion 15798	Percheron
335	J. S. Batten	Russell	Creston Saul 6231	Shire
2350	Greenville Horse Co.	Russell	Operateur 24456 (44537)	Percheron
2363	J. F. Spiker	Chariton	James 11600	French Draft
2699	H. M. Spiker	Belinda	Red Rambler 42526	Trotter
2700	H. M. Spiker	Belinda	Les Authieux 10688	French Draft
2803	J. F. Spiker	Chariton	Refuge 5602	Clydesdale
2851	C. E. Foster	Chariton	Cherif 8711 (14626)	Percheron
2986	R. T. Huston	Russell	Agressive 0872	Trotter
2987	R. T. Huston	Russell	Stuntney Salathiel 6741 (Vol. 24)	Shire
3066	J. E. Ross & J.			

LUCAS COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
	W. Kent	Lucas	Don-Pedro 41038	Percheron
3296	R. O. Miller	Lucas	Mont 47722	Percheron
3361	Wm. Bingaman	Belinda	Falls 31750 (45845)	Percheron
3450	D. Q. Storie	Chariton	The Lord Mayor 2172 (8417)	Shire
3449	D. Q. Storie	Chariton	Duke of Lanark 9195 (10732)	Clydesdale
3447	Daniel T. R. Tice	Russell	Jumbo 15896	Percheron
3584	A. J. Noble	Chariton	Victor 41275	Percheron
3968	Chas. R. Kirk	Chariton	Togo VII 9288 (24802)	Shire
3969	Chas. R. Kirk	Chariton	Lanes Marmion 9287 (24836)	Shire
3970	Chas. R. Kirk	Chariton	Batailleur 42285 (62357)	Percheron
3971	Chas. R. Kirk	Chariton	Beau Poil 42291 (66449)	Percheron
3972	Chas. R. Kirk	Chariton	Etourneau 42287 (67264)	Percheron
3973	Chas. R. Kirk	Chariton	Ventose 42286 (65838)	Percheron
3974	Chas. R. Kirk	Chariton	Aigrin 42296 (64638)	Percheron
3975	Chas. R. Kirk	Chariton	Blaireau 42290 (59417)	Percheron
3976	Chas. R. Kirk	Chariton	Ventriloque 42283 (58828)	Percheron
3977	Chas. R. Kirk	Chariton	Ciboulot 2288 (66571)	Percheron
3978	Chas. R. Kirk	Chariton	Don Ouichotte 2291 (58988)	Percheron
688	C. N. & D. O. Hawkins	Chariton	General Grant 47478 12319	Percheron and French Draft
4105	R. O. Miller & L. Puderbaugh	Lacona	Kimberley 13176	Clydesdale
4106	R. O. Miller & L. Puderbaugh	Lacona	Storm King 49331	Percheron
4244	Harmony Horse Co.	Chariton	Togo 43712	Percheron
3848	E. F. Brown	Derby	Soham Prince 9300 (23714)	Shire
4624	Chas. R. Kirk	Chariton	Crackerjack 9893 (25834)	Shire
4626	Chas. R. Kirk	Chariton	Playfair's Pride 9891 (24522)	Shire
4627	Chas. R. Kirk	Chariton	Mohegan 42733 (67658)	Percheron
4628	Chas. R. Kirk	Chariton	Lilas 42732 (67751)	Percheron
4629	Chas. R. Kirk	Chariton	Stalica 42738 (65987)	Percheron
4631	Chas. R. Kirk	Chariton	Laerte 42731 (68302)	Percheron
4632	Chas. R. Kirk	Chariton	Bosphore 42718 (63188)	Percheron
4633	Chas. R. Kirk	Chariton	Pan-Pan 42735 (58658)	Percheron
4634	Chas. R. Kirk	Chariton	Cherbourg 42720 (62022)	Percheron
4635	Chas. R. Kirk	Chariton	Grenadin 42728 (72451)	Percheron
4737	Chas. R. Kirk	Chariton	Germinant 42727 (72332)	Percheron
4638	Chas. R. Kirk	Chariton	Grillon 42725 (72394)	Percheron
4639	Chas. R. Kirk	Chariton	Gannat 42726 (71673)	Percheron
4640	Chas. R. Kirk	Chariton	Raton 42737 (63830)	Percheron
4641	Chas. R. Kirk	Chariton	Ragottin 42736 (67540)	Percheron
4642	Chas. R. Kirk	Chariton	Eclusier 42723 (63034)	Percheron
4643	Chas. R. Kirk	Chariton	Elegant 42722 (63554)	Percheron
4644	Chas. R. Kirk	Chariton	Eloi 42721 (65786)	Percheron
4645	Chas. R. Kirk	Chariton	Voulcain 42717 (62563)	Percheron
4646	Chas. R. Kirk	Chariton	Grumeau 42730 (70890)	Percheron
4647	Chas. R. Kirk	Chariton	Oyama 42737 (66726)	Percheron
4648	Chas. R. Kirk	Chariton	Bon-Vent 42719 (69110)	Percheron
459	P. M. Scott	Chariton	Makir 28141 (46877)	Percheron
4791	W. A. Halton	Lucas	Grillon Jr. 49451	Percheron
4792	W. A. Halton	Lucas	Gold Mine 51905	Percheron
4793	N. M. Pierce	Russell	Gaudier 51829 (72908)	Percheron
2272	Evans Bros.	Derby	Cherry's Prince 10453	Clydesdale
4861	E. H. Whiteside	Chariton	Don 45212	Percheron
1682	Wm. Herring	Derby	Geant Jr. 25431	Percheron
1740	Kinmonth & Jackley	Russell	Colin 28133 (48416)	Percheron
5125	Johnson Horse Co	Russell	Hugholin 52243 (73528)	Percheron
5136	E. F. Brown	Derby	Edward 4125	Shetland Pony
5215	Geo. Brenneman	Chariton	General Fremont 10677	French Draft
5273	Bert F. Peterman	Chariton	Rocket 17552	French Draft
5311	Frank Youtsey & Son	Chariton	Black Prince 15363	French Draft
5363	Frank L. Troutman	Derby	Daniel 3825 (46820)	Belgian
5364	Frank L. Troutman	Derby	Robert 3837 (46822)	Belgian

LYON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
249	James Kemplay	Rock Rapids	Chambrey 23350	Percheron
73	John Morgan	Rock Rapids	Verndale 35982	Trotter
39	Christopher Herbert	Rock Rapids	Bramble 10721	French Draft
403	Hartenhoff, Wenzel & Zorning	Lester	Nelson 40040	Percheron
2234	H. J. & Harm Meester	Ellsworth, Minn	Lustre 45030	Percheron
2400	Willie Peters	George	Chrastos (53102)	German Coach
2483	G. S. Pohlman	Doon	Colonel 41539	Percheron
2492	Christopher Herbert	Rock Rapids	Invincible 15391	French Draft
2685	Fred Essman	Ellsworth, Minn	Black Rock 44679	Percheron
2824	Henry Nolte & Sons	Ellsworth, Minn	King 26302	Percheron
2934	Henry Moen	Inwood	Adalgo 2521 (37454)	Belgian
3072	Louie Getting	Little Rock	Marabout 44828 (58431)	Percheron
3090	O. J. Feay	Larchwood	Matchless 17224	Percheron
3116	Geo. Rosenberg	Ellsworth, Minn	Armand 24419 (42785)	Percheron
3169	M. D. Shutt	Rock Rapids	Marshall 33389	Percheron
3170	M. D. Shutt	Rock Rapids	Dave 47396	Percheron
3220	Henry Kroeger	Alvord	Sans Souci 13699 (59180)P	French Draft
3320	H. T. Gulk	Larchwood	Volger 50140 (52596)	Percheron
4438	G. W. Patterson & Frank Roth	George	Orso 44076	Percheron
4497	W. H. Lucas	Rock Rapids	M. & L. 47924	Trotter
4596	James Myers	Rock Rapids	Chancellor 29731	Percheron
4926	Kruse & Keull	Little Rock	Crispin 3377 (37806)	Belgian
5115	Christopher Herbert	Rock Rapids	Romulus 58457	Percheron
5231	H. G. McMillan	Rock Rapids	Charlemagne 4556	Percheron
5232	H. G. McMillan	Rock Rapids	Agricola 51280	Percheron
5233	H. G. McMillan	Rock Rapids	Quality 52296	Percheron
5383	John Leonard	Rock Rapids	Norman 59535	Percheron
5384	John Leonard	Rock Rapids	Mantor 59536	Percheron

MADISON COUNTY

170	A. D. Guy	Winterset	Gov. Cummins 13037	French Draft
102	Jno. Riser & Sons	Earlham	Brilliant De Neusvilles 911 (13918)	Belgian
224	Smith Bros.	Earlham	Va-De-Bon-Coeur 12312 (5191)	French Draft
225	W. G. Mitchell	Winterset	Alexander the Great 23294	Percheron
300	Jackson Township Horse Co.	Winterset	Royal Lad 7749	Shire
553	W. A. Forbes	Winterset	Benefactor F. 7847	Shire
463	Earlham Hackney Horse Co.	Earlham	Brunel 626	Hackney
72	St. Charles Percheron Horse Co.	St. Charles	Taupin 28142 (44779)	Percheron
609	Jos. Russell	Winterset	Thumper XXII 6369	Shire
596	Peru French Coach Horse Co	Peru	Universe 2857	French Coach
595	Van Meter Horse Co.	Winterset	Patissier 27392 (45693)	Percheron
410	W. S. Hildebrand	Winterset	Creston Boy 6914	Shire
422	The Ored Percheron Horse Co.	Winterset	Phoebus 34106 (45092)	Percheron
765	Loren Dunbar	Earlham	Reynard 19903	Percheron
772	C. M. Haxton	Earlham	Ony-West 32697	Percheron
868	Schouboe Bros.	Earlham	Numa 3037 (2014)	German Coach
817	St. Charles & Wick Shire Horse Co.	St. Charles	Warmington Brave Prince 6981 (19220)	Shire
882	Thomas Kirkland	Macksburg	Sporting Boy 41163	Trotter
881	Macksburg Draft Horse Co.	Macksburg	Cadix 27450 (48503)	Percheron
1124	Geo. Z. Smith	Macksburg	Rampton Baron 7586 (21781)	Shire
1593	W. D. Bradshaw	Truro	Meti 33976 (53392)	Percheron

MADISON COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2290	Ord Percheron Horse Co.	Winterset	Grisou 41221 (58517)	Percheron
2894	J. D. Ross & J. M. Young	Winterset	Perry Mac 28266	Trotter
2805	Deer Creek Horse Co.	East Peru	Prince Napoleon 50985	Percheron
1725	C. O. Clements	Earlham	Fanfaron 27393	Percheron
3208	Madison County Horse Co.	Winterset	Sansonnet 45764 (54418)	Percheron
3209	C. P. Abbott	Macksburg	Tommy Dunton 45213	Trotter
3341	Union Township Horse Co.	Winterset	Vibrant 40108 (47485)	Percheron
3593	Loren Dunbar	Earlham	Vidoc 45543	Percheron
3594	Loren Dunbar	Earlham	Rocher 47770 (55307)	Percheron
3595	Loren Dunbar	Earlham	Black Diamond 45544	Percheron
3596	Loren Dunbar	Earlham	Turc 44093	Percheron
4057	T. J. Hudson	Winterset	Black Morgan Prince 5058	Morgan
4371	J. H. Shultz	Winterset	McKinley 14679	French Draft
4407	F. W. Workey	Winterset	Wood 47851	Trotter
4487	F. M. McDaniel	Winterset	Red Woodford 37660	Trotter
4488	F. M. McDaniel	Winterset	Colonel P. 12307	Trotter
4559	Bennett Bros.	Earlham	Banker Joe 9769	Shire
4560	Bennett Bros.	Earlham	Powerful 51698	Percheron
4754	Orville Griswold	Macksburg	Toga de Desseneer 3374 (44752)	Belgian
4865	T. E. Hustion	St. Charles	All Right 52091	Percheron
4866	T. E. Hustion	St. Charles	Pride of Iowa 52094	Percheron
4867	T. E. Hustion	St. Charles	Goodenough 52093	Percheron
4868	T. E. Hustion	St. Charles	Joseph 52090	Percheron
4872	Hudson & Wilkinson	Winterset	Highland Star Eagle 3477	Saddle Horse
4010	John Riser & Sons	Earlham	Houzard du Fosteau 3088 (29026)	Belgian
5123	Bennett Bros.	Earlham	Glendaire 52230 (69682)	Percheron
5249	W. S. Eppard	Earlham	Horace Vincent 249	French Coach
5250	W. S. Eppard	Earlham	Lord Roberts II 6403	Shire
5251	W. S. Eppard	Earlham	Brown Royal 5351	Shire
5252	W. S. Eppard	Earlham	Royal Tom 8937	Shire
5253	W. S. Eppard	Earlham	Royal Chief 8936	Shire
5258	Orr & Grout Bros.	Winterset	Dasso 17824	French Draft
5310	H. M. Ford	Winterset	Doak 15320	French Draft
5368	M. A. Gresham	Winterset	Prince Albert II 17109	French Draft

MAHASKA COUNTY

379	R. E. Porter	New Sharon	Sharon King 37310	Trotter
471	C. G. Tice	Taintor	Robert Cecil 9997	Clydesdale
498	Jno. W. Irwin	New Sharon	High Points 22292	Trotter
460	W. A. Sexsmith & J. M. Drennon	New Sharon	Ravaillac 27809 (47054)	Percheron
716	J. R. Moore	Barnes City	Transvalien (21634)	Belgian
461	New Sharon Shire & Hackney Horse Co.	New Sharon	Childwall Chorister 7550 (20348)	Shire
462	New Sharon Shire & Hackney Horse Co.	New Sharon	Heacham Hereward 693	Hackney
1284	A. L. Fox	New Sharon	Major Lacy 28768	Percheron
1328	E. E. Dalbey	Barnes	Isard 498	French Coach
1360	I. M. Reed	Rose Hill	Jno. Addison 10642	French Draft
1361	I. M. Reed	Rose Hill	Bedworth Boy 36968	Trotter
1362	J. N. Moore	Rose Hill	Perplexe (54841)	Percheron
1363	Thos. Seevers	Oskaloosa	Senator 33365	Percheron
1502	J. H. Barnes	Oskaloosa	Blackstone II 14551	French Draft
1542	L. Van Buskirk	Fremont	Aurungzebe 13069	French Draft
1569	J. H. Barnes	Oskaloosa	Bland 45148	Percheron
1571	J. H. Barnes	Oskaloosa	Lord Thomas 12784	French Draft
1681	Michael Denney	Rose Hill	Torcy 15152	Percheron
1704	J. C. Jarard	Taintor	Hobson 8894	Clydesdale
1710	A. S. Jarard	New Sharon	Robbie Burns 11317	Clydesdale
1153	Maleby & Walden	Rose Hill	Sharon's Wonder 8673	Clydesdale

MAHASKA COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1760	R. H. & J. H. Barnes	Olivet	Bon Joan 11467	French Draft
1804	R. Rodman	Oskaloosa	Triboullet 16757 (30543)	Percheron
1803	R. Rodman	Oskaloosa	Remus 11465	French Draft
2010	R. H. & J. H. Barnes	Oskaloosa	Black Beauty 15185	French Draft
2011	R. H. & J. H. Barnes	Oskaloosa	Buster 15183	French Draft
2012	J. H. Barnes	Oskaloosa	Blackstone 15148	French Draft
2014	J. H. Barnes	Oskaloosa	Admiral 46555	Percheron
2015	J. H. Barnes	Oskaloosa	Triboullet 46557	Percheron
2016	J. H. Barnes	Oskaloosa	Coco 46561	Percheron
2017	J. H. Barnes	Oskaloosa	Bosler 46556	Percheron
2019	J. H. Barnes	Oskaloosa	Parfait 46560	Percheron
2020	J. H. Barnes	Oskaloosa	Lacy 46563	Percheron
2022	Arie Kool	Leighton	Ferndale 11685	Clydesdale
2023	Arie Kool	Leighton	Taupier 43736 (61059)	Percheron
2113	Steele & Brubaker	Cedar	Sauveur 27825 (48252)	Percheron
2114	Steele & Brubaker	Cedar	Vasistas 44472 (59403)	Percheron
2245	M. H. Davidson	Oskaloosa	Captain Reaper 45135	Trotter
2315	Alex Soults	Barnes City	Barville III 9826 (19955)	Percheron
2477	R. W. Hoit	Beacon	Powerful 47596	Percheron
2608	J. F. Sheley	New Sharon	Keota Cheri 18854	Percheron
2642	J. C. Redman	Leighton	Robert 41358	Percheron
2643	J. C. Redman	Leighton	Sherlock 42139	Percheron.
2644	J. C. Redman	Leighton	Diplomat 15343	French Draft
2645	J. C. Redman	Leighton	Paul 15341	French Draft
2759	H. W. Lundt	Taintor	Cheri II 10138	French Draft
2760	H. W. Lundt	Taintor	Vesuve 10931 (934) N	French Draft
3015	Heisel & Burrier	Fremont	Billington 8183 (20240)	Shire
3099	Star Horse Co	Fremont	Richland 47441	Percheron
3127	Reed & Moore	Rose Hill	Medine 46182 (60405)	Percheron
3150	J. I. Molyneaux	Barnes City	Blackbrooke Verona 8506 (20259)	Shire
3132	J. C. Redman	Leighton	Joe 15706	French Draft
3344	Heisel & Burrier	Fremont	Remus 11466	French Draft
3392	Heisel & Burrier	Fremont	Rescue 7516	Shire
3486	Jay Roof	Cedar	Bedford 11827	French Draft
3555	C. W. Fellers	Fremont	Fremont Favorite 45315	Percheron
1335	Jesse Ross	Fremont	Montevillers II 9503	French Draft
3987	J. E. Hull	Taintor	King Lofty 45988	Percheron
3988	J. E. Hull	Taintor	Lofty 23904	Percheron
3989	J. E. Hull	Taintor	Pike Timber Chief 11664 (2813)	Clydesdale
3990	J. E. Hull	Taintor	Kilted Lad IV 12554	Clydesdale
3991	J. E. Hull	Taintor	Great Scott 145	Suffolk
4231	A. L. Rice	Oskaloosa	Gaston d' Hoze 1660 (27794)	Belgian
2875	C. Ver Ploeg	Oskaloosa	Shade Baron 40648	Trotter
4477	J. E. Hull	Taintor	Master Perch 46009	Percheron
4478	J. E. Hull	Taintor	Black Chief 13150	Clydesdale
3377	J. E. Hull	Taintor	Scott W. Jr. 45377	Trotter
4558	M. L. Phillips	New Sharon	Joe Blackburn 11618	Clydesdale
4584	Henry Sytsma	Oskaloosa	Pompe 15469	French Draft
4585	R. H. McWilliams	Oskaloosa	Gilbert 15470	French Draft
4586	T. J. Vander Beek	Oskaloosa	Brilliant 54635	Percheron
4764	Benj. Warbleton	Taintor	Royal Prince IX 9878 (23890)	Shire
4765	P. Jackson & Sons	Peoria	Robert Bell 13723	Clydesdale
2009	H. W. Jones	Rose Hill	D'Orsay 15181	French Draft
4928	R. W. Hoit	Beacon	Astrakan 48946 (63205)	Percheron
4753	M. L. Phillips	New Sharon	Rubin 3530 (Vol. XV)	Belgian
1237	R. K. Davis	Oskaloosa	September 11613	Clydesdale
5122	R. K. Davis	Oskaloosa	Wilkeslander 49781	Trotter
5157	Fred Williams	Barnes City	Artist Montrose Squirrel 2037	Saddle Horse
5158	Fred Williams	Barnes City	Rule 6978 (Vol. 17)	Shetland Pony
5183	Chas. Bass	Rose Hill	Rumulus 54527	Percheron
5334	Joe R. Moore	Barnes City	Knottingly Marquis 10375 (24363)	Shire
5367	E. J. Heisel	Fremont	Mahaska Joe 18367	French Draft
5015	John Monlneyx	Fremont	Givet 56776 (71963)	Percheron

MARION COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
602	F. M. Ridgeway	Swan	Emerald 12135	French Draft
601	F. M. Ridgeway	Swan	Pride 14422	French Draft
727	L. Maasdam & Son	Pella	Nova 49735	Trotter
740	W. W. Rankin	Knoxville	Legal Tender 6322	Shire
764	John H. Cowman	Percy	Santiago 13030	French Draft
473	Pella Horse Co.	Pella	Aride 25056 (45434)	Percheron
819	Walter Whitlatch	Columbia	Bootle Champion 3963 (10991)	Shire
821	Lee Wilson	Columbia	Black Sam 40065	Percheron
909	Henry Bickford	Columbia	Stuntney Lubin 6731	Shire
908	Henry Bickford	Columbia	Rex of La Moille 32067	Percheron
1015	Johannes Stravers	Pella	Charlot (55213)	Percheron
1354	Van Derwaal & Van Zante	Pella	Jules 1354	Belgian
1237	Marysville Horse Co.	Knoxville	Lord Fordy 6909 (Vol. 24)	Shire
1586	L. V. Colwell	Columbia	Admiral B. 22850	Percheron
1807	J. B. Elliott	Knoxville	Baron De Jay 41467	Trotter
1864	Seth Way	Knoxville	Emmet H. 31170	Trotter
2021	W. M. Black	Knoxville	Dieppe 15067	French Draft
1655	W. H. Maasdam	Pella	Expert 5882	Trotter
2211	Hartley & Wilson	Columbia	Lamy 46057 (56473)	Percheron
2581	H. H. Conrey	Knoxville	Bristol Lange 1441 (25360)	Belgian
2876	C. L. Hardman	Knoxville	Roitlet 25037 (44653)	Percheron
866	P. Jackson & Sons	Pella	Rose Lad 11316	Clydesdale
3019	Harvey James	Knoxville	Rampart 6775 (19963)	Shire
3058	D. C. Belknap	Knoxville	Charles Walton 44918	Trotter
820	Bellamy & Hanna	Harvey	Fred Willes 38017	Trotter
3126	J. M. Maddy	Knoxville	Stuntney Fearnaught 5347	Shire
3159	Lewis Dunham	Knoxville	Keota Warsaw 20693	Percheron
3201	Isaac Hodgson	Pleasantville	Vigoureaux (55019)	Percheron
3213	Wm. Visser	Knoxville	Man-Well 33885	Percheron
3223	Mike Slykhuis, Jno. DeBok and Matthew Karl	Percy	Scarcliffe Powerful (19110)	Shire
3333	Wm. J. Way	Dallas	Keota Seductor 18225	Percheron
3304	Levi W. Caulkins	Bussey	Treko G. 45269	Trotter
3332	Bussey Horse Co.	Bussey	Armand 25587 (42962)	Percheron
3360	J. D. Cunningham	Knoxville	Kentucky Jay 38687	Trotter
3359	J. D. Cunningham	Knoxville	Directum Boy 31294	Trotter
3349	Neifert & Gillion	Attica	Paragon 24940	Percheron
3319	A. K. Hart	Pleasantville	George B. 45537	Percheron
3426	C. R. & J. A. Hughes	Percy	Billy Rex 45388	Trotter
3451	R. Core	Pleasantville	Penrose 8803	Clydesdale
3506	Osa Butcher	Pleasantville	Vermast 10866	French Draft
3543	John W. Bruere	Tracy	Sir Consul 9661	Trotter
3550	C. F. Blackman	Knoxville	Biceps 9923 (13577)	Percheron
3667	J. Van Niewenheinzen & Co.	Pella	Corbett 6493	Shire
3847	D. D. Marsh	Pleasantville	Montmirail 28442 (45040)	Percheron
3850	D. C. Belknap	Knoxville	Parapet 15872	Trotter
2289	DeGeus Bros.	Pella	Keota Jabez 44756	Percheron
4074	Hanna & Bellamy	Knoxville	Willie Riley 38311	Trotter
4150	C. L. Hardman	Knoxville	Bon Carlsbad 5417 (17184)	Shire
4146	T. D. Tice	Pella	Iowa Pride 01015	Trotter
4145	T. D. Tice	Pella	Reciprocity 10266	Clydesdale
4129	Lee Wilson	Columbia	Gold Magnet 44050	Trotter
4128	Hartley & Wilson	Columbia	Pavilion de Noirhat 3041 (Vol. 14, p. 377)	Belgian
4233	L. M. Hardin	Pleasantville	Agenda 10856 (44896)	French Draft
4232	L. M. Hardin	Pleasantville	Finch's Buster Brown 8429	Shire
4191	Jacob Van der Pol	Pella	Luxemburg 51213 (62264)	Percheron
4283	Hanna & Bellamy	Knoxville	Erskine Warrior 10610	Clydesdale
1587	J. E. Verploeg	Pella	Searchlight II 6396 (19115)	Shire

MARION COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4592	F. N. Daubenspec	Knoxville	Manallerton 48191	Trotter
4601	Scott Smith	Tracy	Bob O Boy 6483	Shetland Pony
473	John DeBok	Percy	Dewey 9634	French Draft
4840	A. W. Hagens & Son	Pella	Macon 57400 (68596)	Percheron
3899	Mike Slykhouse	Pleasantville	Black Ben 44724	Percheron
2411	G. A. Templeton	Monroe	Matchfield Jr. 12634	Clydesdale
4887	Hanna & Bellamy	Harvey	Star Light 8422 (Vol. 19)	Shetland Pony
2008	M. C. Bellamy	Knoxville	B. Success 43988	Percheron
4899	A. B. Van Nin wegen	Pella	Theodore Roosevelt 15930	French Draft
3664	C. L. Hardman	Knoxville	Reve De Or De Wanagem 2723 (29490)	Belgian
5079	L. Maasdam	Pella	Francosur 48941 (62869)	Percheron
5083	M. Kaldenberg	Pella	Earl of Lonsdale 12782	Clydesdale
2214	M. H. Spiker	Columbia	Lucky Lad of Town's End 898 (9320)	Hackney
5182	W. W. Rankin	Knoxville	Baron 29221 (43566)	Percheron
1522	Mills & Brooks	Knoxville	Cyclone 15655 (24031)	Percheron
5317	F. M. Ridgeway	Swan	Paris 17722	French Draft

MARSHALL COUNTY

538	F. C. Knight	Laurel	Brooklyn 6487	Shire
370	Edw. Blackburn	Laurel	Major B. 11141	Clydesdale
342	J. S. Paul	Laurel	Sans-Peur 34016 (51102)	Percheron
367	Wm. Schultz	Laurel	McHanna 54531	Trotter
369	Edw. Blackburn	Laurel	Prince Henry 10990	Clydesdale
191	C. A. Rolston	Liscomb	Jupiter 30599 (46712)	Percheron
183	Jno. Brown	Marshallown	Major Marion 9584	Clydesdale
316	Henry Hilleman, Sr.	State Center	Newton Duke 7014	Shire
490	W. E. Elliott	Clemons	Red Gregory 41805	Trotter
691	LeGrand Percheron Horse Co.	Le Grand	Petrus 27054 (43878)	Percheron
406	W. B. Elliott	Marshalltown	Wayne Boy 30242	Trotter
752	Wm. Paul	Laurel	Wesley V. 13540	French Draft
751	Wm. Paul	Laurel	Keota Romer 19485	Percheron
856	Louis Eckhardt	State Center	Laubet 10689	French Draft
1270	C. W. Bergman	Laurel	Keota Lord 7588	Shire
1351	Chas. Greatreaks	Marshalltown	John Adrain 0611	Trotter
1506	J. A. Ward	Gilman	Glenwood Dewey 3429	Shetland Pony
1507	J. A. Ward	Gilman	Mac Claskie Jr. 9470	Clydesdale
1508	J. A. Ward	Gilman	Tunis 11095	French Draft
1536	B. F. & C. A. Robinson	Marshalltown	Junot 35620 (53132)	Percheron
1512	J. W. Crammer	Liscomb	Sebastian 257 (4)	Belgian
1814	D. C. Bligh	Laurel	Water Boy 34784	Trotter
1818	Jacob Waltemeyer	Marshalltown	Forban 813 (9770)	Belgian
2638	Bear Grove Draft Horse Co.	State Center	Cavaignac 27832 (44517)	Percheron
2639	W. A. Taggart	State Center	Lipton 9265	Clydesdale
2670	H. L. Hartwig	State Center	Wenona Forester 4765	Shire
2745	Dannen Bros.	Marshalltown	Blockey Prince 19668	Percheron
2049	C. B. Dannen & Sons	Melbourne	Ernest 41428 (64967)	Percheron
2768	B. L. Pyle	Marshalltown	Duchesne 25440 (42847)	Percheron
2848	E. G. Miller	Melbourne	Riffain 25149 (43641)	Percheron
2913	Henry D. Neidert	State Center	Rob Edwards 12394	Trotter
3230	Sherman Wolfgong	Marshalltown	Mongaillard 41232 (53040)	Percheron
3231	Sherman Wolfgong	Marshalltown	Brulot 41233 (52580)	Percheron
2553	Sherman Wolfgong	Marshalltown	Joubert de Silly 2627 (21952)	Belgian
3243	E. E. Carver	Marshalltown	Prince Araneta 43474	Trotter
3441	D. S. Forrey	Marshalltown	Fay K. 47551	Percheron
3485	Joe Bunn	St. Anthony	Loubert 32075	Percheron
3507	Grant Kuhns	Laurel	Manly 43098	Trotter
3577	Melbourne Percheron Horse Co.	Rhodes	Scarabe 28455 (46896)	Percheron

MARSHALL COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3688	E. W. Mahn	State Center	T. J. Girton 32093	Trotter
4364	Fred S. Neier	Haverhill	Debonair 42528	Percheron
4503	C. W. Preston	Laurel	Barbot 24427 (43798)	Percheron
3473	W. C. Garton	Albion	Beau Cheval 15846	French Draft
5404	Walter E. Snelling	Clemons	Erin McGregor 40075	Trotter
5406	Edna W. Bennett	Marshalltown	Granite Grattan 45335	Trotter

MILLS COUNTY

542	Phillip Hambsch	Malvern	Arrondi 26131 (44741)	Percheron
176	C. H. Peer	Strahan	Lord Gregory 42903	Trotter
174	C. H. Peer	Strahan	Harry Mount 7024	Trotter
647	W. E. Wickersham	Glenwood	Barthelmy 1156 (21580)	Belgian
646	W. E. Wickersham	Glenwood	Alpago (1368)	Oldenburg Coach
419	A. S. Edwards	Glenwood	King Mills 35959	Trotter
703	A. M. Miller	Glenwood	Hinxton Jumbo 6391 (10688)	Shire
708	C. L. Miller	Glenwood	Belkader (22968)	Percheron
758	Geo. A. Coiner	Malvern	Insurgent 7728	Shire
822	C. T. Boles	Malvern	Jessie 23830	Percheron
1130	Wales Shire Horse Co.	Emerson	Harshfield Warrior 7019	Shire
1196	Percheron Horse Co.	Glenwood	Luther 29507 (47005)	Percheron
1370	C. E. Ballain	Emerson	Jean Bart 12732	Percheron
1463	J. L. Douglas	Henderson	Keota Spy 18226	Percheron
1464	J. L. Douglas	Henderson	Dalzel 25634	Percheron
1668	D. M. Culver	Hastings	Sophocles (7479) 5995	Percheron
1150	W. J. Roberts	Henderson	Driftway 31612	Trotter
1823	J. R. Maynes	Henderson	Nailstone Sidar 7987 (22612)	Shire
2284	S. S. & R. B. Summers	Malvern	Robert Burns 5632	Shire
2995	Geo. Schurr	Strahan	Monone 41547 (62758)	Percheron
2996	Geo. Schurr	Strahan	Flag of Truce 8823 (22364)	Shire
3033	C. M. Follett	Malvern	Nailstone Luke 8826 (24783)	Shire
3034	L. C. Stevenson & W. H. Salyers	Malvern	Coco 44305 (58097)	Percheron
1266	Hans Neilsen	Emerson	Top Sawyer 3d 7506	Shire
4210	J. R. Maynes	Henderson	Coureur 41816 (64733)	Percheron
4211	J. R. Maynes	Henderson	Nailstone Baskerville 9176 (24469)	Shire
319	Geo. Lloyd	Glenwood	H. D. 40324	Trotter
4542	Hans Nielsen	Emerson	Stuntney Ruby 9751 (23760)	Shire
4636	Chas. T. Boles	Malvern	Gambier 42724 (72944)	Percheron
4630	Glenwood Horse Co.	Glenwood	Lister 42739 (63985)	Percheron
4625	Glenwood Horse Co.	Glenwood	Bradgate Harold 9892 (24990)	Shire
175	Geo Estes	Glenwood	Brown Eagle 32794	Trotter

MITCHELL COUNTY

400	W. D. Runge	Osage	Emoi 27436 (43650)	Percheron
137	S. T. Doyle	Riceville	Valliant 41035 (58028)	Percheron
136	S. T. Doyle	Riceville	Estevan 40356 (51744)	Percheron
152	Stacyville Percheron Horse Co.	Stacyville	Selim 24740 (43671)	Percheron
145	C. B. Jacobs	Osage	Charming Tarbreoch 8964	Clydesdale
214	H. W. Clay	Osage	Bayard de Tooz (29730)	Belgian
212	A. I. Stacy	Stacyville	Star 29780	Percheron
230	E. J. Howe	Osage	Stuntney Barak 6730	Shire
559	Richard Jordan	McIntire	Gilbert 33622	Percheron
558	Richard Jordan	McIntire	Woodbury Herod 4554	Morgan
560	Richard Jordan	McIntire	Bill Morrison 19327	Percheron

MITCHELL COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
645	Mitchell Belgian Horse Ass'n	Osage	Lingot (18150)	Belgian
666	Riceville French Draft Horse Co	Riceville	Tigre 11275	French Draft
665	J. C. Kathan & Son	Osage	Ned K. 43983	Trotter
789	J. C. Ashmore	Osage	Nateby Tom 3509 (10036)	Shire
883	Fred Stark	Riceville	Bataille (19951)	Percheron
1174	O. V. Perry	Riceville	Heir of Fame 10639 (11607)	Clydesdale
1398	C. H. Duenow	St. Ansgar	Stuntney Dante 7059	Shire
1657	G. W. Shelhamer	Riceville	Olney 20998	Percheron
17	W. D. McCabe	Osage	Pilot Panic 4861 37792	Morgan and Trotter
1345	Fred Worple	Alta Vista	Vermouth 16021	Percheron
2466	Richard Jordan	McIntire	Mack 47151	Percheron
2536	Frank Krulish	St. Ansgar	Magnus Boy 12545	Clydesdale
2813	C. B. Wilkes	Riceville	Lofty 22202	Percheron
2863	St. Ansgar Horse Co.	St. Ansgar	Versailles 25196 (45415)	Percheron
2889	Richard Jordan	McIntire	Governor Roosevelt 23185	Percheron
2888	H. A. Skinner	Riceville	Dancing Master 33349	Trotter
2940	J. H. Penny	Stacyville	Canaillard 21514	Trotter
2957	J. C. Kathan	Osage	Kentola 41288	Trotter
2956	J. C. Kathan	Osage	Norvaillis 443107	Trotter
3068	Riceville French Coach Horse Co	Riceville	Vercingetorix 3292	French Coach
3062	Wert Roe	Riceville	Kimberley 27346 (46790)	Percheron
3582	C. H. Duenow	St. Ansgar	Castalet 47641	Percheron
3585	Richard Dorsey	Osage	Ridgley 10182	French Draft
3700	Richard Dorsey	Osage	Vermont 24408 (2568)	Percheron
4025	G. H. Judd	Riceville	Stewart Manor 45755	Trotter
4153	O. H. Thorson	St. Ansgar	Germinal 43745 (56292)	Percheron
4156	O. H. Thorson	St. Ansgar	Emmermann (6701)	East Friedland Coach
4173	A. Bridges	Riceville	Glen B 40137	Trotter
3290	Earl Penrose	Osage	Mercure (630)	French Draft
4554	Clinton Carrison	Osage	Prince Charlie 18877	Clydesdale
780	T. J. Madison	Osage	Nateby Tom 3509 (10036)	Shire
5174	A. C. Kelly	Otranto	Rex 47980	Percheron
5416	A. Bridges	Riceville	Earl Colbert 36852	Trotter

MONONA COUNTY

890	Moorhead Imported Percheron Co.	Moorhead	Bequin (43629)	Percheron
889	E. E. Richards	Moorhead	Schley 30716	Percheron
888	C. L. Watkins	Whiting	Billy Bartlett 35827	Trotter
1493	Anton Hanson	Soldier	Courcival 27412 (45661)	Percheron
1494	M. B. Hildreth	Soldier	Ethan Allen 30974	Percheron
1780	A. L. Erskine	Castana	Black Beauty II 33375	Percheron
2195	J. Gries	Ute	Bayard 27400 (48374)	Percheron
2437	H. Koth	Monona	Major Glencoe 9173	Clydesdale
2485	J. A. Sarff	Whiting	Vinarold 38107	Trotter
2658	W. W. Griffith	Onawa	Prince Soliman 43382	Percheron
2762	G. C. Harrison	Blencoe	Amour 26914 (45827)	Percheron
2763	G. C. Harrison	Blencoe	Marquette 40952	Percheron
3071	S. D. Jewell	Whiting	Mat Kane 31575	Trotter
3151	A. V. Van Dorn	Rodney	Bruno 33730 (46059)	Percheron
3197	Onawa & Blencoe Horse Co.	Onawa	Raisonnable 24711 (45404)	Percheron
3679	Henry Hall	Whiting	Bay Duke 9370	French Draft
3687	Mapleton Percheron Horse Co.	Mapleton	Sarthois 43100 (60900)	Percheron
3999	James Hall	Whiting	Leslie 46882	Percheron
4112	W. W. Griffith	Onawa	Pompon 25739 (48499)	Percheron
3455	Ole K. Lee	Mapleton	Bouncer 48058	Percheron
4508	W. W. Griffith	Onawa	Periot 25474	Percheron
4499	A. V. Van Dorn	Rodney	Monarque de Wacken 3157 (38102)	Belgian

MONONA COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4864	Martin Brettin	Soldier	Bonaparte d' Hor 3246 (41890)	Belgian
5021	Kohnekamp & Witte	Ute	Autrichien 16414 (59818)	French Draft
5030	Hughes & Skidmore	Whiting	Black Night 49226	Percheron
5140	G. C. Harrison	Onawa	Togo 42312	Percheron

MONROE COUNTY

401	J. F. Fitzpatrick	Georgetown	Alfred 297 (9)	German Coach
171	J. A. Smith	Albia	Keota Mesmerist 24848	Percheron
150	T. B. McDonald	Lovilia	Wick Spencer 12511	Trotter
107	L. A. McCreery	Albia	Castleman 16072	Trotter
88	Ira Noble	Albia	Roma 19920	Percheron
87	Ira Noble	Albia	Red Maple 33985	Trotter
205	W. B. Griffin	Albia	Ernest Wilton 26829	Trotter
207	W. B. Griffin	Albia	Paulus 17248	Percheron
206	W. B. Griffin	Albia	Belding 27923	Trotter
299	Farmers' Mutual Horse Co.	Albia	The Saint (20971)	Shire
551	A. Scieszinski	Melrose	Putnam 8755	Clydesdale
1303	J. R. Love	Albia	Gideon D. 7647	Shire
1382	J. S. Quinn	Melrose	Michel (29753)	Percheron
1564	Lovilia Shire Horse Co.	Lovilia	Wenlock Thumper 6325 (20153)	Shire
1693	J. F. Roney	Melrose	Brutus 5224	Shire
1694	J. F. Roney	Melrose	Newaygo 9192	Trotter
2152	Avery Horse Co.	Avery	Chacal 41415 (58077)	Percheron
2172	J. R. Harker	Ute	Corsair 40934	Percheron
2217	J. F. Coleman	Melrose	Osceola Banker 8830	Shire
1277	Ira Robinson	Albia	Loulon 28367 (48118)	Percheron
2334	J. J. Mullin	Melrose	Fleurus 14851 (58414)P	French Draft
2629	Avery Horse Co.	Avery	Dunois 28439 (45239)	Percheron
2567	J. R. Love	Albia	Bluff Creek Tom 8185	Shire
2568	J. R. Love	Albia	Dick Monroe 8186	Shire
2826	J. R. Love	Albia	Black Peter 8723	Shire

MONTGOMERY COUNTY

535	F. L. Steninger	Red Oak	Cherbourg 24274 (44003)	Percheron
536	F. L. Steninger	Red Oak	The Rogue 5413	Shire
210	J. D. Gourley	Villisca	Villisca General 5210	Shire
514	T. J. Reznor	Stennett	Fruitier 40415 (48530)	Percheron
1223	J. H. Thompson	Elliott	McKinley III 7047	Shire
1222	J. H. Thompson	Elliott	Creston Archie 3408	Shire
1253	A. C. Weidman	Red Oak	Raynal 25163 (44651)	Percheron
1312	Elliott Draft Horse Co.	Stennett	Girton Rogue 5348	Shire
2294	C. E. Thompson	Elliott	Creston Boy 7968	Shire
2709	J. E. Farmer	Villisca	Albert Margrava 42964	Trotter
2713	M. M. Smith	Villisca	Tribsign 45044	Trotter
2729	Henry Ebert	Red Oak	Francois II 40111	Percheron
246	F. E. Shires	Elliott	Pierre 10912 (3425)	French Draft
3036	C. P. Van Valkenburg	Villisca	St. Hilaire 42229 (48656)	Percheron
3070	C. P. Van Valkenburg	Villisca	Cafe 48317 (55411)	Percheron
3102	D. B. Gunn	Red Oak	Gamaleon 7825	Trotter
3211	Jno. P. Warne	Villisca	Black Dewey 15768	French Draft
3101	D. B. Gunn	Red Oak	Plum Right 4945 37341	Morgan Trotter
3281	R. S. Light	Villisca	Valdyne 42490	Percheron
3466	D. B. Gunn	Red Oak	Delta 32379 (46136)	Percheron
3529	R. S. Light	Villisca	Red Toler 11226	Trotter
3765	Wm. Arnold	Red Oak	Major F. 8887	Shire
4016	Imrie Bros.	Red Oak	Turbulent 29982 (48658)	Percheron
4070	Eliott Draft Horse Co.	Stennett	Bury Banker 6688 (17829)	Shire
4117	Keeper, C. L. Williams	Red Oak	Road Bird Jr. 39973	Trotter
4172	T. L. Quinn	Elliott	Dan Walton 45076	Trotter

MONTGOMERY COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4357	Thos. Hornby	Elliott	Gernot 291 (1205)	German Coach
4358	Grant Draft Horse Co.	Grant	Wentworth Hero 9196 (24797)	Shire
358	Pilot Grove Horse Co.	Red Oak	Rival 43256	Percheron
359	French Draft Horse Co.	Elliott	Dreyfus 9365	French Draft
223	C. P. Van Valkenburg	Villisca	Fred 11735 50725	French Draft Percheron
4578	Sampson Bros.	Stanton	Balsaire 52988	Percheron
4855	Henry Bruce	Red Oak	Le Bon 52083	Percheron
2831	E. D. Wilson	Elliott	Togo 46093	Percheron
5266	J. E. Farmer	Villisca	Hal Field 01113	Trotter
5316	W. S. Hully	Elliott	Woodman Gorefield 9255 (24832)	Shire
5319	W. S. Hully	Elliott	Gillibrand Hero 9438 (24847)	Shire
5369	W. S. Hully	Elliott	Elkan 4529	German Coach

MUSCATINE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
653	G. A. Milnes	West Liberty	Volunteer 22521	Percheron
1102	Wilton Horse Breeders' Ass'n.	Wilton	Gaillard 28737 (44740)	Percheron
1104	W. A. Heck	West Liberty	The Sheriff 38114	Trotter
1106	P. N. Gibson	West Liberty	Boissy 25151 (45438)	Percheron
1105	P. N. Gibson	West Liberty	Cherbourg 2078	French Coach
1114	M. P. McKeown	Cranston	Keota Brevet 21660	Percheron
1132	E. J. Brown & R. T. Shannon	Nichols	Porto 1584 (20878)	Belgian
1133	E. J. Brown & R. T. Shannon	Nichols	Bon Micephorus 6063 (17189)	Shire
1125	E. A. Poole	West Liberty	Russell Edsal 34782	Trotter
1211	Chas. H. Stone	Muscatine	Mammon 2020	Shetland Pony
1324	E. F. Richman	Muscatine	Pancantara 39080	Trotter
1325	E. F. Richman	Muscatine	Red Knight 13880	Trotter
1348	M. B. Walters	West Liberty	Tam-Tam 14239 (19079)	Percheron
1367	F. W. Dickey	West Liberty	Lindsay Dale 40391	Trotter
1411	E. F. Richman	Muscatine	Lindas Duke 26377	Percheron
1178	Union Stock Co.	Conesville	Riverain 25596 (45452)	Percheron
346	Fred Waters	West Liberty	Canotier 24445 (44604)	Percheron
1769	Boyd Bros	Conesville	Jupiter of Worsley 5373 (16202)	Shire
3112	F. A. Pike	Nichols	Saxon Jet 8867 (21843)	Shire
3248	Will Maxwell	Conesville	L'Ami 21190	Percheron
3155	Harry Hartley	West Liberty	Jules 22675 (43574)	Percheron
3572	F. W. Dickey	West Liberty	Sanlerton 43874	Trotter
3963	G. A. Warfield	Muscatine	Colosse 25238	Percheron
4088	W. H. Liebbrand	Muscatine	Major Gamaleon 47638	Trotter
4089	W. H. Leibbrand	Muscatine	Al Rene W. 45540	Trotter
4108	D. Connell	Muscatine	Guy Sulten 26645	Trotter
4175	P. N. Gibson	West Liberty	Reseda 2074	French Draft
4174	P. N. Gibson	West Liberty	Forban 15657 (22813)	Percheron
4289	Iowa Township Draft Horse Co.	West Liberty	Lezard 51120 (56722)	Percheron
4335	Chet Phillips	West Liberty	Concours 52440 (64754)	Percheron
1817	H. J. & B. W. Brown	Nichols	Jerry 41599	Percheron
4443	Joe Nyenhuis	Muscatine	Counsel Attor 41013	Trotter
4534	W. A. Heck	West Liberty	Black Squirrel 44520	Trotter
4535	W. A. Heck	West Liberty	Croghan 28436	Trotter
4536	W. A. Heck	West Liberty	Melbourne Audubon 47099	Trotter
4567	L. A. Downs	West Liberty	Red Gamaleon 28001	Trotter
4566	Harry P. Hartley	West Liberty	Quentin 15177	French Draft
4591	Montpelier Horse Co.	Montpelier	Fleau 50798 (63148)	Percheron
4604	Chas. H. Stone	Muscatine	Lotor 8198	Shetland Pony
4874	Andrew Healy	Ardon	Mouton de Marche 6694 (34078)	Belgian
5112	Pingrey & Watkins	West Liberty	Gernardin 58552 (73036)	Percheron
654	J. Van Horn	Atalissa	Bonneval 32337 (45494)	Percheron
5306	John Webster	West Liberty	Teddy R. 44560	Trotter

O'BRIEN COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
431	Schneider & Saupe	Sheldon	Algerien 12260 (52673)	French Draft
168	Big Four Belgian Breeding Ass'n	Sheldon	Mon Desir 1694 (23708)	Belgian
189	C. W. S. Gilson	Sanborn	Gilford Bevans 42796	Trotter
70	A. O. Crooks	Primghar	Nailstone Don 5731 (16845)	Shire
42	Alex Scott	Paullina	Pride of Iowa 10954	Clydesdale
432	Schneider & Saupe	Sheldon	Maskomita 24661 (43287)	Percheron
662	George G. Kellum	Paullina	Berton 32949	Percheron
661	George C. Kellum	Paullina	Prince Paullina 30670	Percheron
705	W. A. Smith	Paullina	Chansler 35747	Percheron
706	W. A. Smith	Paullina	Pindore 42227 (47470)	Percheron
1048	H. C. Thayer	Primghar	Condon 21519	Percheron
1137	J. R. Tibbets	Hartley	Prince Bless 5178	Morgan
1517	David S. Taylor	Sheldon	Seductuer 40077	Percheron
1549	R. C. Jordan	Sutherland	J. D. M. 0166	Trotter
1623	John Breme	Hartley	Rodney Rex 43475	Trotter
1624	R. P. Powers	Hartley	Altro 35068	Trotter
1641	G. W. Sherwood	Sheldon	Major Bell 32605	Trotter
1642	G. W. Sherwood	Sheldon	Clarke 41101	Trotter
1643	G. W. Sherwood	Sheldon	Lockheart 6864	Trotter
1644	G. W. Sherwood	Sheldon	Woodford Wilkes 2538	Trotter
2232	P. J. Weir	Sheldon	Corbit 32946	Percheron
2233	P. J. Weir	Sheldon	Thorney Royal 8631 (19182)	Shire
2235	B. F. Shirk	Sutherland	Melito 23352	Percheron
2247	W. C. Kimmell	Sheldon	Hector 31092	Percheron
2490	W. J. Ullman	Paullina	Allegro 20046	Percheron
2605	Noble McDonald	Gaza	Gay Montrose 9886 (9916)	Cyldesdale
2687	Thos. Prendergast	Sanborn	Bartle 14509	French Draft
2545	Wm. Kluender & Co.	Paullina	Kisposcki 50535 (52254)	Percheron
2586	H. E. Brown	Primghar	Chambouder 45400	Percheron
2587	H. E. Brown	Primghar	Archer 45401	Percheron
2730	Richardson & Culp	Sutherland	Coronet 46272	Percheron
3181	Wilson Bros.	Primghar	Tom Mack 14945	Trotter
3289	A. C. Bailey	Sutherland	Mazzeppa 48319	Percheron
3325	McCracken & Harrington	Paullina	Ergo	Oldenberg Coach
3045	Thos. W. Farnsworth	Sanborn	Mango 34577	Trotter
3431	Wm. F. Schilds	Paullina	Martin III 48990	Percheron
3645	W. L. Reager	Hartley	Hartley Jim 45666	Trotter
3673	G. Wesslink	Sheldon	Student (Vol. 7)	Oldenberg Coach
3924	David Johnson	Sutherland	Marquis du Val 2969	Belgian
3967	T. E. Mann	Sutherland	Turbulent 43774 (46897)	Percheron
3983	M. S. Draper	Sutherland	Moncrieffe Matchless 410 (5327)	Hackney
773	I. E. Emery	Sutherland	Wyomie 29674	Trotter
4038	John Keene	Sutherland	Green Mountain Jr. 5512	Morgan
4077	Dan Soehren	Moneta	Bonjour 2300 (34656)	Belgian
4153	Chas. Burns	Sanborn	Leroy 50221	Percheron
4301	Edo Peters	Hartley	Paulus 22645 (43133)	Percheron
4331	Fred Gehrke	Hartley	Julian 1186	Cleveland Bay
2414	Max J. Drefke	Paullina	Gilbert 1094	Cleveland Bay
4600	Raymond Powell	Sutherland	Yellow Kid 48576	Percheron
4901	John S. Keene	Sutherland	Quiem 2098	French Coach
3252	A. Pingel	Sutherland	Temeraire 45897 (62265)	Percheron
4982	Powell & Flinders	Paullina	Pindarre 51883 (60404)	Percheron
4985	A. O. Crooks	Primghar	Serven's Agricola 8907	Shire
5016	Herman Bonath	Primghar	Solimon Junior 54167	Percheron
5077	Edo Peters	Hartley	Gratteur 42748 (71058)	Percheron
2442	J. D. Kloppenberg	Hartley	Stuntney Golden King 5744	Shire
5087	Burns Bros.	Hartley	S. S. W. 32396	Trotter
5088	Burns Bros.	Hartley	Maxon G. 42893	Trotter
5124	T. T. Idse	Primghar	Graisseur 52233 (70400)	Percheron

O'BRIEN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5085	Hamilton & Gruver	Paullina	Cato Sells 14727	Trotter
4333	Henry & Theodore Popp	Hartley	Captain George 9085	Shire

OSCEOLA COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
60	W. S. Foley	Melvin	Prudent 26736 (18349)	Percheron
1202	Jno. N. Jackley	Ashton	Kirsch II 11837	Percheron
1349	Ashton Horse Co.	Ashton	Bayard Berni 1815 (23388)	Belgian
1350	L. Pommer & H. H. Wubbena	Ashton	Fayot 52453 12928	Percheron French Draft
1336	H. E. Dean	Ocheyedan	Durben 40011	Trotter
614	J. & N. Frese	Sibley	Gabels Victor 7124	Shire
2335	G. E. Mackinson	Sibley	Arvola 3307	German Coach
2336	G. E. Mackinson	Sibley	Fusain 28291 (45804)	Percheron
2681	G. E. Mackinson	Sibley	Columbus 8270	Shire
2682	G. E. Mackinson	Sibley	Matteval 44814 (54795)	Percheron
2793	Sibley Belgian Horse Co.	Sibley	Edgard 2622 (17888)	Belgian
2859	R. Klatt	Sibley	Knightly King 15997	Trotter
2935	Geo. Hamilton & Son	Ocheyedan	Hero Hobson 31544	Trotter
3089	G. W. Snyder	Sibley	Louis de Fallais 1244 (14696)	Belgian
3184	Joe Cload	Ocheyedan	Fulgurant 26704 (45618)	Percheron
3288	G. W. Patterson	Osceola Co.	Alban 46137 (64483)	Percheron
3364	G. W. Patterson	Osceola Co.	Rataplan 30390 (45062)	Percheron
3053	John S. D. Pell	Allendorf	Keota Mounton 11872	Percheron
4295	A. V. Everett	Ocheyedan	Moniteur 22587 (26974)	Percheron
4890	O. A. Campbell	Harris	Sheridan 23319	Percheron
4260	Geo. A. Romey	Melvin	Black Joe 20838	Percheron
4992	Fred A. Bremer	Ocheyedan	Aiglon 50410	Percheron

PAGE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
209	W. L. Lundy	Clarinda	Axlon 40254	Trotter
625	F. P. Barr	Clarinda	Alaxandre 13083	French Draft
624	F. P. Barr	Clarinda	Napoleon 13030	French Draft
791	W. H. Dutton	Coin	Champion 566 (2856)	Belgian
853	Edward Davison	Clarinda	Nathanson 5973	Thoroughbred
1034	Jno. Nothwehr	Yorktown	Caporal 32662 (45508)	Percheron
1016	A. A. Brush	Shenandoah	Luculus (48711)	Percheron
992	East River Percheron Horse Co.	Clarinda	Capitane 32425 (47591)	Percheron
1019	Wm. Hiser	Essex	Vernot (57364) 45572	Percheron
1193	Wall Street Horse Co.	Hepburn	Danube 5703 (44226)	Percheron
1194	Wall Street Horse Co.	Hepburn	Tricotteur 26073 (44684)	Percheron
1265	J. M. Bryson	Clarinda	Prince Oneer 35763	Trotter
1285	J. A. Latimer	Shenandoah	Dewey 27475	Percheron
1619	Thos. Wiggins	Coin	Merfield Rival (7787)	Shire
1702	Jno. Rurode	Coin	Roublard 14082 (22897)	Percheron
1735	G. G. Fleener	Clarinda	Darius 8883	French Draft
1736	G. G. Fleener	Clarinda	Black Hawk 14734	French Draft
1737	G. G. Fleener	Clarinda	Mintaka 9576	French Draft
1799	Wm. F. Schenck	Clarinda	Creston King 6026	Shire
1811	College Springs Horse Co.	College Springs	Brilliant III 10086	French Draft
2104	R. A. Duncan	Shambaugh	Roy 39451	Trotter
2105	R. A. Duncan	Shambaugh	Brooklyn 11101	French Draft
2136	F. P. Barr	Clarinda	Duke of Wellington 13084	French Draft
2141	W. F. Hopker	Northboro	Beranger 35566 (48918)	Percheron
2140	W. F. Hopker	Northboro	Francis 41697	Percheron
2122	A. G. Harris	Northboro	Hempfield Sampson Jr. 8774	Shire
2330	B. F. Allender	Essex	Charmant 47514 (56243)	Percheron
2791	W. T. Goodman	Coin	Gilbert 14034	French Draft
2800	C. M. Cowen & J. F. Chase	Shenandoah	Drift Allerton 36428	Trotter
2134	F. P. Barr	Clarinda	Pourquoi Pad III 6358 (20122)	French Draft

PAGE COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3153	J. B. Lawson	Norwich	Nonant III 6790 (14568)	French Draft
3258	Lewis Annam	Clarinda	Sampson 47510	Percheron
3259	H. W. Runyon	Coin	Banker 4829	Shire
3277	John H. Kendall	Clarinda	Gazon 26912 (45079)	Percheron
3428	K. G. Herren	Clarinda	Axett 43532	Trotter
3462	E. T. Farrens	Clarinda	Kimball 18235	Trotter
3491	Wolfe & McFarrin	Braddyville	Keota Lord 20671	Percheron
3492	O. V. Hurdle	Braddyville	Onrosemedium 36162	Trotter
3490	Farmers Horse Co	Braddyville	Palatin 26722 (24376)	Percheron
3552	B. H. McClintock	Essex	Greenlander 3552	Trotter
3557	W. R. McClintock	Essex	Colonel Greenlander 45597	Trotter
3666	Wm. Hoppock	Shenandoah	Consul Junior 282	**Oldenburg Coach**
3903	W. E. McKee	Braddyville	Percheron Boy 26762	Percheron
3930	M. W. Slaight	Clarinda	Keota 16222	French Draft
1191	Wm. Hizer	Essex	Gaulois 13559	French Draft
3766	W. E. McKee	Braddyville	Hero III 8349	Shire
4324	Elmer M. Gibson	Coin	Longworth 45596	Percheron
4349	J. A. DeCamp	Shenandoah	Madere 29270 (48310)	Percheron
4350	J. A. DeCamp	Shenandoah	Ed Little 11486	French Draft
4361	Pitman Bros.	Clarinda	Stuntney Cricket 9749 (23749)	Shire
4348	J. A. DeCamp	Shenandoah	Major McKinley 41047	Percheron
4380	N. J. Thomas	Clarinda	G. W. S. 28589	Trotter
4597	W. H. Dutton	Coin	Carlo 2879 (41892)	Belgian
2367	Oscar Hask	Northboro	Stuntney Rooineck 8859 (22334)	Shire
4851	Frank P. Barr	Clarinda	Romulus 18274	Percheron
2144	W. L. Richards	Northboro	White Nemesis 34581	Trotter
4909	A. G. Thurman	Blanchard	Nuneham Harold 9602 (23569)	Shire
4284	G. C. Webster	Blanchard	Counsellor 48999	Morgan
4933	B. F. Allender	Essex	Ananas 52423 (67592)	Percheron
4934	W. E. McKee	Braddyville	Andrew 42145	Trotter
4762	W. E. McKee	Braddyville	Dick Rogers 50283	Percheron
5013	Davit Cutter	Coin	Humbert 34718	Percheron
5184	John Manifold	Shenandoah	Giroux 42806 (69500)	Percheron
5320	McFarland & Hughes	Clarinda	Clarion 54789 (50116)	Percheron
5373	Harry W. Tinnell	Braddyville	Onrose Junior 50477	Trotter

PALO ALTO COUNTY

153	J. J. Steil	Emmetsburg	Ben Otto 23370	Percheron
36	H. A. Thomas	West Bend	Moliere Jr. 25762	Percheron
418	Melvin Fisk	Curlew	Ellerslie Fisk 32546	Trotter
1103	Osgood Percheron Horse Co.	Osgood	Maupas 40460 (51903)	Percheron
43	H. A. Mason	Ruthven	Duke 22798	Percheron
1631	Jonas Mantz	West Bend	Carpare 2237 (25122)	Belgian
2030	M. F. Coonan	Emmetsburg	Joe Weitzel 21522	Trotter
2343	J. B. Jackson	Osgood	Lors Rene Jr. 43857	Trotter
2397	J. J. Steil	Emmetsburg	Ergo A. 40349	Trotter
2502	E. D. Spencer	Emmetsburg	Bardon Blaze 6450 (15973)	Shire
2600	J. J. Steil	Emmetsburg	Aid Dunton 45059	Trotter
2631	W. H. Dempsey	Curlew	Kilsley Bonny Tom 5291 (17426)	Shire
2867	Hardi Horse Co.	Graettinger	Hardi 28370 (48420)	Percheron
2890	C. P. McKowen	Rodman	Indoc 524	French Draft
3120	J. H. Nolan	Ruthven	Archer Boy 11941	Clydesdale
3185	Claer, Debolt & Co.	Ayrshire	Lord Minto 43403	Percheron
3241	Clarence Maxwell	West Bend	Cyclone 7230	Shire
3368	A. E. Harrison & Co.	Ayrshire	Waterloo 13491	French Draft
3417	B. F. Stanton	Ruthven	Wilkie Simmons 23057	Trotter
385	Jos. F. Nolan	Ruthven	The Serpent 34861	Trotter
3183	Fred Johnson	Ruthven	Sidi (46215)	Percheron
141	Stanton & Lee	Ruthven	Figaro 31385	Percheron
4276	Claer, Debolt & Co.	Ayrshire	Marquis 51326	Percheron
4405	Thos. Claer	Ruthven	St. Pierre 58096	Percheron
4406	Thos, Claer	Ruthven	King Midas 50651	Percheron

PALO ALTO COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1872	C. J. Brown	West Bend	Noble Prince II (22629)	Shire
4480	D. D. Johnson & Sons	Curlew	Draughtsman III 9207	Shire
4544	A. E. Harrison	Ayrshire	Caceno 4095	Percheron
4545	A. E. Harrison & Co.	Ayrshire	Joe 4641	Percheron
1616	Julius Sundermeyer	Cylinder	Matchless Junior 5555	Shire
5018	N. Holsey	West Bend	Governor 32489	Percheron
5019	N. Holsey	West Bend	Strong Boy 4975	Percheron
5101	A. W. Wagner	Emmetsburg	Mack S. 9285	Shire
2575	A. W. Wagner	Emmetsburg	Tranquille 4036 (64135)	Percheron

PLYMOUTH COUNTY

1589	Martin McNamara	Remsen	(24194) Bramble 20841	Percheron
1714	Nick Thill	Oyens	Theodore 140	Suffolk
1793	T. J. Wilson	Kingsley	Ondawa (Vol. 6, p. 589)	Thoroughbred
1983	Held Bros.	Hinton	Jonathan 2 (1302)	Oldenburg Coach
1882	Held Bros.	Hinton	Enzain 3107	German Coach
2123	D. M. Baker & Co.	Merrill	King Rayon 25624	Percheron
2282	Remsen Percheron Horse Co.	Remsen	Sosthene 33964 (53249)	Percheron
2630	A. R. Whitney	Akron	Volubilis 3405	French Coach
2704	John Luken	Le Mars	Railleur 1196 (Vol. 9)	Belgian
2922	Ireton & Struble Percheron Horse Co.	Struble	Premier 40170 (51434)	Percheron
3104	J. W. Patterson	Akron	Premier Prince 9189	Clydesdale
1560	Martin McNamara	Remsen	Perche II 40820	Percheron
3406	E. P. Harris	Le Mars	Parker Hitt 40743	Trotter
3681	Neptune Horse Co	Kingsley	Selim 24114	Percheron
3984	West Branch Percheron Horse Co.	Merrill	Joques 40949	Percheron
4181	Wm. Borinsky	Akron	Mabille 23069 (44574)	Percheron
4290	W. H. Morse	Akron	Gallopore 16944	Percheron
4312	Held Bros., P. Schneider & A. Helm	Hinton	Carabin 52515 (65747)	Percheron
4315	Mai & Ludwig	Remsen	Columbus 35619 (48766)	Percheron
4836	Johnson Twp. Stallion Ass'n	Merrill	Farceur de Bousdal 3249 (42638)	Belgian
4919	Wm. Barinsky	Akron	Bataclan 3243 (43950)	Belgian
5006	Harry Antrim et al.	Kingsley	Jean d' Her 3247 (39742)	Belgian
5075	Lalan Bros.	Harris	Gilbert 50182	Percheron
4369	Lalan Bros.	Harris	Biscalen 25707 (43007)	Percheron
5151	Wm. Franzen	Kingsley	Marquis d' Oignies (Vol. X)	Belgian

POCAHONTAS COUNTY

452	Alex Barber	Rolfe	Eckhart 30745	Trotter
454	A. D. Cleal	Rolfe	Saturne 25704 (44161)	Percheron
357	L. N. Ellis	Laurens	Sim Sim 33673	Trotter
372	H. F. Toben	Palmer	Brilliant de Lieffe 23810	Belgian
104	J. W. Brock	Plover	Lavance 32949	Trotter
103	J. W. Brock	Plover	Audubon Boy 12842	French Draft
304	Jacob Winegarden	Pocahontas	Martin IV 41848	Percheron
293	W. G. Runyan	Havelock	Rob Roy 9442	French Draft
321	W. E. Campbell	Gilmore City	Oliver 34870	Percheron
684	W. A. Kyle	Laurens	Financier II 1440 (25362)	Belgian
726	Wm. Steen	Havelock	Martin V. 13123	French Draft
877	Jas. Frakjar	Rolfe	Prince Ponk 11889	Clydesdale
876	Jas. Frakjar	Rolfe	Prince Lynedoch 9088	Clydesdale
1200	E. M. Kellogg	Gilmore City	Kruger 32452	Trotter
1629	O. F. Edwards	Havelock	Ralph 1629	Percheron

POCAHONTAS COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
784	Lind & Charlton	Rolfe	Martin 17067 (35482)	Percheron
2270	M. D. Wolcott	Gilmore City	Vulcain 42906	Percheron
2340	W. A. Galbraith	Fonda	Fontanelle 26782	Percheron
2434	Lyman Bros.	Gilmore City	Dictator 10759	French Draft
2435	M. L. Miller	Pocahontas	Keota Thrive 2485	Percheron
2436	M. L. Miller	Pocahontas	Cook 25138	Percheron
2439	Alex Parker	Rolfe	Orville 29276	Percheron
2441	W. G. Runyan	Havelock	Univers 47773 (59594)	Percheron
2271	Wilder Small	Gilmore City	Leward 35762	Percheron
2573	L. A. Dumond	Fonda	Black Diamond 42748	Percheron
2574	B. F. Barber	Fonda	La Porte Boy 28849	Trotter
2761	Olson Bros.	Palmer	De Foe 15528	French Draft
1263	B. F. Barber & L. A. Dumond	Fonda	Borolyptol 32229	Trotter
2885	H. D. Brinkman	Rolfe	Martin VII 13125	French Draft
2895	W. A. Elliott	Pocahontas	Prince Thayer 44061	Trotter
2930	Frank Short	Rolfe	Capitaine 41449 (64119)	Percheron
2950	Harvey Eaton	Fonda	Mere Harold 5639 (16251)	Shire
3040	W. P. Hopkins	Laurens	Haiti 34283 (51666)	Percheron
3041	W. P. Hopkins	Laurens	Neptune-Pacha 585 (4212)	Belgian
2269	G. C. Grove	Rolfe	Deneau 35759	Percheron
1613	T. E. Meredith	Plover	Milord de Reille 979 (13990)	Belgian
3634	A. D. Ryon	Laurens	Alfo 42768	Trotter
3821	Clark Perry	Fonda	Montagnard 2743 (33476)	Belgian
2610	Cal Saylor	Palmer	Maroc 41881 (63223)	Percheron
1115	Ferguson & Miller	Palmer	Kruger 29902 (48266)	Percheron
215	Thos. & Chas. Eberle	Laurens	Raithby Tommy 6853 (19043)	Shire
132	Will E. Campbell	Gilmore City	Bailly 26932 (45965)	Percheron
4510	R. J. Sanders	Fonda	Victor II 14440	French Draft
4520	J. A. Hansen	Rolfe	Indian 4553	Thoroughbred
4375	W. G. Runyon	Laurens	Upwood Combination 9240 (23823)	Shire
3145	Small & Day	Gilmore City	King Unique 43164	Percheron
59	T. J. Byrne	Fonda	Mark 5695	Shire
5025	Small & Day	Gilmore City	Nailstone Swell II 25437 (10022)	Shire
5132	John McCormick	Gilmore City	Iowa Lad 35885	Thoroughbred
1461	John Doyle	Pomeroy	Paulin 23076	Percheron

POLK COUNTY

402	Campbell Belgian Horse Co.	Campbell	Faro de Raille (16838)	Belgian
86	Chas. Irvine	Ankeny	Gabriel 1286 (25336)	Belgian
161	A. K. Good	Ankeny	Grenat 41001 (64205)	Percheron
162	A. K. Good	Ankeny	Nailstone Teddy 7980 (22959)	Shire
270	T. J. Shaw	Mitchellville	Major Consul 40342	Trotter
58	E. J. Boynton	Des Moines	Macklin 15881	Trotter
14	Lester Clark	Valley Junction	High Tide 26760	Percheron
15	Lester Clark	Valley Junction	Dewey 21748	Percheron
447	Commeggs & Stoll	Bondurant	Voltaire 10482	French Draft
541	G. W. Smith	Altoona	Creston Jerome 5978	Shire
502	Jas. A. Sage	Ankeny	Stuntney King Cole III 3676 (10538)	Shire
501	Jas. A. Sage	Ankeny	Newton Corsair 5557	Shire
495	Cresap Bros.	Altoona	Stanley 40944	Percheron
503	Jas. A. Sage	Ankeny	Oku 7981 (22654)	Shire
504	Jas. Watt	Des Moines	Hail Cloud 23606	Trotter
517	Saylor Horse Co.	Ankeny	Duc d' Aumale 22667 (43506)	Percheron
570	J. W. Day	Des Moines	Miley Boy 34332	Trotter
633	J. N. McClellan	Des Moines	Vinicus 33800	Trotter
639	R. T. Mally	Berwick	Sumner G. 32362	Trotter
675	Farmers' Belgian Horse Co.	Mitchellville	San Souci de Bett (29460)	Belgian
676	Beaver Valley Horse Co.	Grimes	Fourire 34325 (46288)	Percheron

POLK COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
632	L. J. Ringgenberger	Sheldahl	Don A. Hail 43433	Trotter
606	C. L. Weisner	Grimes	Fritz 15718 (24011)	Percheron
465	N. Ware	Runnells	Iowa 11724	French Draft
763	Walter Ferguson	Runnells	Keota Still 10190	French Draft
798	Tom James	Des Moines	Barondale 20184	Trotter
1119	W. J. Crawford	Des Moines	Gold Miner 30411	Trotter
1173	N. J. Otto	Des Moines	Nabuko 27536 (44298)	Percheron
1227	N. W. Murrow	Mitchellville	King Milord 33762	Percheron
1317	Big Four Horse Co.	Grimes	Tampon 26702 (45561)	Percheron
1321	Poweshiek Percheron Horse Co.	Farrar	Carvalho (45130)	Percheron
1462	J. W. Anderson & Son	Des Moines	Birdeer 37105	Trotter
1521	Gust Alf and Otto Engstrom	Sheldahl	Refrigerant 35218 (52501)	Percheron
1660	W. W. Garner	Des Moines	Signor 2250 (31806)	Belgian
1663	W. W. Garner	Des Moines	Caesar de Heusden 2256 (29494)	Belgian
1664	W. W. Garner	Des Moines	Dewey 24241	Percheron
1665	W. W. Garner	Des Moines	Daniel 41273 (57822)	Percheron
1667	W. W. Garner	Des Moines	Nogentais 41272 (52852)	Percheron
1723	Willard Ferguson	Des Moines	Conro 25761	Percheron
1765	A. J. Good	Ankeny	British Ensign III 7970 (22140)	Shire
1168	G. W. Smith	Altoona	Midnight 31057	Percheron
729	W. W. Garner	Des Moines	Merry Legs 8309	Shire
2145	Ivy Horse Co.	Altoona	Montmirail 31784 (44304)	Percheron
2403	W. C. St. Clair	Des Moines	Taupin 42878 (53115)	Percheron
2487	Hunter, Hall & Bachman	Ankeny	Udell 32621	Trotter
2667	C. W. Schaeffer	Mitchellville	Baptiste (10552)	Belgian
2456	A. K. Good	Ankeny	Black Lad II 8681 (23932)	Shire
92	N. Bartholomew	Des Moines	Galileo Rex 12347	Trotter
3186	C. I. Stanton	Valley Junction	Iason U. 0917	Trotter
3265	F. M. Winfrey	Runnells	Silver Duke 15774	French Draft
3374	G. W. Grigsby	Sheldahl	Martin de Hazior 2445 (31862)	Belgian
3398	F. C. Bellairs	Valley Junction	Meadowthorpe 37055	Trotter
3400	W. W. Garner	Des Moines	Vimoutiers 41763 (60933)	Percheron
3398	W. W. Garner	Des Moines	Tambour de Genly 25	Belgian
3410	S. O. Longnecker	Elkhart	Mendota Champion 6051	Shire
3567	W. W. Garner	Des Moines	Dandola 31267 (48378)	Percheron
3568	H. P. Wilkinson Bros.	Mitchellville	Norman Emperor 8543 (23544)	Shire
3604	W. W. Preston	Avon	Consul the Second 1315	German Coach
3650	W. W. Garner	Des Moines	Louis d'Acesse 2567	Belgian
3682	Chas. Irvine	Ankeny	Abraham 13365	French Draft
3329	Wyoming Cattle Co.	Des Moines	Charming Lad 11297	Clydesdale
4116	Lester Clark	Valley Junction	Alcindor 51440 (56649)	Percheron
4196	Ashworth Bros.	Valley Junction	Ellerslie Rex 47717	Trotter
4259	F. Berky	Ankeny	Andromede 53117 (66411)	Percheron
4171	S. C. Morton	Avon	Talma 51441 (60729)	Percheron
4320	John E. Brown & Son	Mitchellville	Favor 15835	French Draft
4344	Chas. Irvine	Ankeny	Creon 51804	Percheron
4343	Chas. Irvine	Ankeny	Coquet 2766 (41852)	Belgian
4396	J. F. Randolph	Ankeny	Ubert 50255	Percheron
4401	D. Weeks	Des Moines	Star Russell 1902	Saddle Horse
4485	W. W. Garner	Des Moines	The Hero 51679	Percheron
4514	T. J. Shaw	Mitchellville	Axindale 4449	Trotter
5010	F. Berkey	Ankeny	Monarch Shire 9544	Shire
5082	T. J. Shaw	Mitchellville	Amber King 40225	Trotter
5022	T. J. Shaw	Mitchellville	Winsome Albert 9205	Shire
5129	Chas. Irvine	Ankeny	Robert II de Rum 3995 (46686)	Belgian
5147	S. C. Morton	Des Moines	Gogeard 52231 (70788)	Percheron
5164	Union Wrecking Co.	Des Moines	Dourdan 15234 (1011)	French Draft
5165	Union Wrecking Co.	Des Moines	Merchant's Prince 16124	French Draft

POLK COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
5166	Union Wrecking Co.	Des Moines	Merchant's King 16128	French Draft
5167	Union Wrecking Co.	Des Moines	Bramhope Fawcett 7901 (229950)	Shire
5190	J. A. Sage	Ankeny	Ankeny Banker 8772	Shire
731	W. F. Peitzman	Grimes	Fred Hudson 5031 (4541)	Trotter & Morgan
5167	N. Bartholomew	Des Moines	Albingen 39753	Trotter
5330	L. T. Waters	Des Moines	Baron Pride 54719	Percheron
5331	L. T. Waters	Des Moines	Pearl Pride 55398	Percheron
5360	George Kopf	Farrar	Plunger 52097	Percheron
5148	J. H. Woods	Elkhart	Philotus 32270	Trotter

POTTAWATTAMIE COUNTY

149	M. C. Robinson	Avoca	De Wet 34618	Trotter
449	Chas. Kingman	Avoca	Reno 11014	French Draft
258	Wm. Casson	Neola	Major II 22922	Percheron
242	Underwood Belgian Horse Co.	Underwood	Perfait de Hantes 1405 (20334)	Belgian
588	Albert Peterson	Hancock	Arton 32308 (44548)	Percheron
627	Macedonia Percheron Horse Co.	Macedonia	Raspail 33970 (48599)	Percheron
714	C. S. Price	Macedonia	Beacon 22448	Percheron
771	Ben Gress	Walnut	Bonny Tom II 6828 (18544)	Shire
849	T. S. Jolliff	Avoca	Red Chaser 36708	Trotter
850	T. S. Jolliff	Avoca	Tryner 27776	Trotter
841	Jos. Jungferman	Neola	Nailstone Rare Lad 6317	Shire
833	L. Sheets	Carson	Nimble 8536	Trotter
1094	H. E. Patterson	Avoca	Titan 2457	French Coach
1093	H. E. Patterson	Avoca	Fil-der-fer 25308 (44716)	Percheron
1148	Edward Falk	Oakland	Pride of Oakland 0713	Trotter
1243	E. Morrison	Neola	Villars 28079 (4883)	Percheron
1365	L. Kastner, Jr.	Council Bluffs	Brockway 11314	French Draft
1604	Burke Bros.	Walnut	Rock Rover 1604	Shire
1738	Wm. Converse	Hancock	General Grant 4202	Clydesdale
1975	Leonard Everett	Council Bluffs	Banker 11384	French Draft
2280	Harrison Smith	Avoca	Teddy M. 38001	Trotter
2328	Stageman Bros.	Council Bluffs	Nero 34885	Percheron
2365	S. P. White	Oakland	Samson 7967	Shire
2500	Wm. Shaw	Council Bluffs	Lieutenant 30582 (45345)	Percheron
269	C. P. Wasser & G. B. McClellan	Avoca	Lord Linton 12690	French Draft
2452	E. T. Waterman	Council Bluffs	Caffrey 2d 5288	Morgan
2534	Treynor Imp. Percheron Horse Co.	Silver City	Romeo (48568)	Percheron
2750	Prairie Rose Horse Co.	Walnut	Chenimeau 31446 (48510)	Percheron
2775	Lew Brown	Avoca	Ring Rathbun 35429	Trotter
2751	Prairie Rose Horse Co.	Walnut	Asman 1977 (1095)	German Coach
2935	Botna Valley Horse Co.	Carson	Coeur de Lion 26708 (46414)	Percheron
2929	Underwood Belgian Horse Co.	Underwood	Perfait De Hautes 1405 (20334)	Belgian
744	Rassmussen & Pruess	Walnut	Royal Defender 9692	Clydesdale
3067	Henry Parker	Macedonia	Dawson 27937	Percheron
3245	W. A. Lewis	Council Bluffs	Rendlesham Politician (3159)	Suffolk
3351	Leonard Everett	Council Bluffs	Papillon 32836 (48304)	Percheron
3383	Jos. A. Johnson	Oakland	Barbancon 924 (13438)	Belgian
3384	Frank Collard	Oakland	Wrangel 105 (556)	German Coach
3600	C. A. Ronk	Macedonia	Driftmont 43336	Trotter
3678	Ira Nixon	Council Bluffs	Stuntney Brake 20064	Shire
3055	Geo. Foster	Dumfries	Martin 3362	Percheron
3918	B. P. White	Oakland	Black Harold 9055	Shire

POTTAWATTAMIE COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
834	W. W. Ronk	Macedonia	Morgan Whip 4300	Morgan
835	J. A. Burgin	Walnut	Jack E. 42191	Trotter
2717	Herman Hoeppner	Avoca	Lacheur 35512 (48174)	Percheron
1007	Henry J. Stuhr	Minden	Championat 34512 (48681)	Percheron
4046	E. Morrison	Neola	Duc de Bragance 15656 (30632)	Percheron
4072	Hopp Bros.	Treynor	Walton 14903	French Draft
4275	W. E. Campbell	Avoca	The Starter 41871	Trotter
4296	Sankey & Neilson	Walnut	Tourine 51195	Percheron
4297	Sankey & Neilson	Walnut	Nez 2592	French Coach
4411	H. D. Anderson	Macedonia	Abricot 42363 (63279)	Percheron
4479	J. H. McKowen	Honey Creek	J. W. G. 0553	Trotter
1147	Broughton & Stuart	Walnut	Prince of Belges 1818	Belgian
1487	Louis Wilding	Crescent	Lee-Dallas 50238	Percheron
3651	Wm. Blust	Avoca	Nutbon 15736	Trotter
2724	L. R. Ellsworth	McClelland	Helmuth 1299	German Coach
259	Ehlers & Koch	Minden	Iowa 1404 (25326)	Belgian
4910	E. T. Waterman	Council Bluffs	Lord Byron 30976	Percheron
4984	Wm. Christo	Oakland	Cabreur 3649 (Vol. XV)	Belgian
3904	Alex L. Stuart	Walnut	Search Light 7857	Shire
78	John Burgin, Jr.	Walnut	Conway Brilliant 904	Belgian
2865	E. Morrison	Neola	Ventriloque 3403 (46253)	Percheron
5357	Adam Haun	Loveland	Delagrand 40739	Percheron
5409	Fred Poffenbarger	Council Bluffs	Baron Allerton 31811	Trotter

POWESHIEK COUNTY

393	Montezuma Horse Co.	Montezuma	Paulus 22673 (43384)	Percheron
351	Jos. C. Johnston	Deep River	Caesar 27547 (47055)	Percheron
186	Dr. A. E. Anger	Brooklyn	Doc Allerton 42167	Trotter
340	P. F. Smith	Montezuma	Montezuma Chief 35503	Trotter
338	P. F. Smith	Montezuma	Morgan Panic 5003	Morgan
314	Thompson Miller	Montezuma	Flambeau (26400)	Belgian
311	J. B. Gorsuch	Montezuma	Bristolin (25356)	Belgian
470	C. M. Adams	Grinnell	Thiers 27070 (45769)	Percheron
466	C. M. Adams	Grinnell	Charmant 25211 (42404)	Percheron
425	A. C. Thompson & Son	Grinnell	Chinois 30036	Belgian
577	Miles & Evans	Grinnell	Henry Ward Beecher 3036	Shetland Pony
590	A. Bramer	Guernsey	Creston Victor 5759	Shire
634	Barnes City Horse Co.	Montezuma	Regional 26083 (45302)	Percheron
685	W. H. Murphy	Hartwick	Vindex 4671	Morgan
622	M. Winchell	Malcom	Emilien 12046 (13396)	Percheron
404	E. J. Hadley	Grinnell	Ellerslie Russell 38817	Trotter
855	H. J. Schmidt	Grinnell	Jamin 1060 (12013)	Belgian
913	M. A. Latham	Searsboro	Keota Boatman 5805	Shire
1036	E. J. Korns	Hartwick	Princewick 2d 12139	Clydesdale
1037	E. J. Korns	Hartwick	Handsome Prince II 9486	Clydesdale
1205	W. F. Blain	Montezuma	Favor 20633	Percheron
1280	Ewart Belgian Horse Co.	Ewart	Carol (29756)	Belgian
1473	J. W. Johnson	Deep River	Stuntney Beckett (23740)	Shire
2244	Sugar Creeek Percheron Horse Co.	Searsboro	Bazard 27082 (45284)	Percheron
438	Frank Schultz	Hartwick	Pompon II 16290	Belgian
2238	J. L. McIlraith	Hartwick	Japonias 27985 (46830)	Percheron
1501	M. L. Latham & Sons	Searsboro	Blocky 14550	French Draft
2732	S. G. Ingraham	Montezuma	Rendlesham Cromwell 252 (333)	Suffolk
2857	Fred Reed	Brooklyn	Matchless 5478	Shire
3056	Zack Hull	Brooklyn	Darby 33944	Percheron
510	A. Halstead	Grinnell	Lord Roberts 7037	Shire
1035	J. L. McIlraith	Hartwick	Princewick 12138	Clydesdale
3200	L. E. Anthony	Malcom	Prince Consort 8455	Clydesdale
3390	L. E. Anthony	Malcom	Dan Oline 45306	Trotter
3741	Wilkes Horse Co.	Grinnell	Wilton Wilson 44875	Trotter

POWESHIEK COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3837	Miles & Evans	Grinnell	Brilliant Joe 50395	Percheron
4029	J. L. McIlraith	Hartwick	Buffalo de Wyt 2948	Belgian
4091	John Gabriel	Deep River	Faro d' Iseghem 2950 (41896)	Belgian
4141	H. J. Fick	Hartley	Grandini 23068 (44572)	Percheron
3284	Miles & Evans	Grinnell	Melrose W. 42541	Trotter
4285	Wm. Hagenlock	Grinnell	Polo 3897 (30398)	Belgian
4305	G. E. Tinker	Brooklyn	Bon Astur 8793 (21169)	Shire
4308	Wm. Hagenlock	Grinnell	Crofton Sirus 9305 (22228)	Shire
4310	Miles & Evans	Grinnell	Moteur 50745 (49911)	Percheron
4359	W. O. Woods	Malcom	Senator W. 33245	Trotter
4388	R. B. Cranston	Deep River	Silver Prince 12265	Clydesdale
4400	Charley Tarpstra	Grinnell	Pella Pride 12255	Clydesdale
4526	J. F. Lineweaver	Brooklyn	Olympia 54521 (53384)	Percheron
4570	Howard E. Smith	Montezuma	Keswil 48130	Trotter
382	S. C. Warnick & Co.	Brooklyn	Malvern Glory 5405 (16799)	Shire
1573	H. P. Johnson	Montezuma	Felix 12021 (12576)	Clydesdale
3894	Foster & Bailey	Grinnell	Heldridge's Medhurst 52414	Percheron
4969	Wm. Hagenlock	Grinnell	Pilate 3450 (Vol. XV)	Belgian
263	H. A. Johnson	Guernsey	King Harold 2d 6685	Shire
5086	F. W. Silvers	Montezuma	Voltaire d' Esemael 3349 (Vol. XVI)	Belgian
5134	Schmidt & Meyer	Grinnell	Bon Russell 47004	Shire
5146	J. F. Axtell	Tilton	Duke XVI 10308 (24198)	Trotter
315	McCalla & Binegar	Searsboro	Poweshiek Chief 35156	Clydesdale
5220	A. E. Anger	Brooklyn	Iowa Boy 10533	Trotter

RINGGOLD COUNTY

280	W. F. Blackman	Delphos	Poppennheim 3315	German Coach
281	W. F. Blackman	Delphos	Ad Leitem 35931	Trotter
282	W. F. Blackman	Delphos	Fais (23048)	Belgian
34	E. S. Botleman	Diagonal	Creston Boy 38733	Trotter
643	J. A. Bliss	Diagonal	D. J. Count 6969	Shire
801	M. Mariner	Tingley	Victor Morgan 4854	Morgan
803	J. I. Morrison & Co.	Tingley	Capitola 29721	Percheron
340	J. P. Drake	Mount Ayr	Essort (47601) 45473	Percheron
802	M. Mariner	Tingley	Agate 26434	Percheron
800	Tingley Shire Horse Co.	Tingley	Toft Right Stamp 5704	Shire
1183	Claude Bowen	Mount Ayr	Leader 35373	Percheron
1184	Claude Bowen	Mount Ayr	Uncle John 16266	Trotter
1330	H. I. Brent	Diagonal	Fred 30652	Percheron
1319	C. E. Bliss	Diagonal	Mocking Dare 36411	Trotter
1320	C. E. Bliss	Diagonal	Captain Dewey L. 30607	Trotter
1418	M. C. Parr	Maloy	Biron 24813 (44622)	Percheron
1419	M. C. Parr	Maloy	Golden Prince 9806	Clydesdale
1516	L. D. Norry	Redding	Julliard 27525	Percheron
1545	Kellerton Horse Co.	Kellerton	Black Duke 27988	Percheron
1588	Ellston Draft Horse Co.	Ellston	Papillon 27488 (48264)	Percheron
1583	Washington Twp. Horse Co.	Diagonal	Reveur (46169)	Percheron
1701	J. D. Blauer	Tingley	Imperial Duke 11925	French Draft
2229	D. H. Pike	Diagonal	Becca 47442 (46911)	Percheron
2279	The Kellerton Horse Co.	Kellerton	MacQueen's Model 10603	Clydesdale
2318	Gus Winterschied	Tingley	Baronet Dunbar 10522	Clydesdale
2361	J. & A. W. Michael	Benton	Montague 30682	Percheron
2615	J. H. & C. M. Waugh	Redding	Mack 14465	French Draft
2669	Tingley Percheron Horse Co.	Ellston	Lutin 24152 (44678)	Percheron
2467	D. M. Lane	Diagonal	Morning Star 11925	Percheron
2469	L. A. Duff	Diagonal	Rendelsham Colonial 261 (3174)	Suffolk
2548	Wm. Reasoner	Beaconsfield	Cinturier 31110 (47506)	Percheron

RINGGOLD COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2562	Lotts Creek Percheron Horse Co.	Mount Ayr	Freluquet 32429 (48745)	Percheron
2696	L. D. Norris	Redding	Grueze 15864	Percheron
2797	W. F. Stetzler	Kellerton	Nutseal 38320	Trotter
2951	Kellerton Shire Horse Co.	Kellerton	Moors Commander 6758 (18220)	Shire
1974	W. F. Blackman	Delphos	Daniel Boone 10606	French Draft
3085	W. F. Blackman	Delphos	Alto 28227	Percheron
1615	C. F. Miller	Diagonal	Stuntney Jonadab 6739 (Vol. 24)	Shire
3187	Bliss Bros.	Diagonal	Countness Right Stamp 9014	Shire
3240	Wm. Tapp	Tingley	St. Claire 43148	Percheron
3386	Belgian Horse Co.	Ellston	Bijou de Marchove 1606 (25416)	Belgian
3407	Ellston Standard Bred Trotting Horse Co.	Ellston	Floodwood 39673	Trotter
3699	A. B. Clewel	Mount Ayr	Capulet 16207	French Draft
3764	E. F. Lambert	Tingley	Lambert 50903	Percheron
3763	E. F. Freeman	Tingley	Sheridan 41693	Percheron
3762	E. F. Freeman	Tingley	Potomac 41689	Percheron
3761	E. F. Freeman	Tingley	Merimac 41691	Percheron
3760	E. F. Freeman	Tingley	Carnot 41852	Percheron
1601	John Lahs	Delphos	Hobson 10346	French Draft
4189	E. S. Botleman	Diagonal	Doc Quinn 44252	Trotter
4532	Diagonal Horse Co	Diagonal	Citoyen (33174)	Belgian
4883	Willis Sparks	Ellston	Teddy 48746	Percheron
4936	Thorp & Robinson	Beaconsfield	Ganglion 42764 (69933)	Percheron
2362	Perkins & Swartwood	Knowlton	Dewey 10345	French Draft
5111	D. Haviland	Diagonal	Trotteur 32661 (45500)	Percheron
4833	Robt. Berg	Diagonal	Black Douglas 10896	Clydesdale
5213	Tom Robinson	Beaconsfield	Bellett 17356 (63850)	French Draft
4997	A. A. Hunter	Diagonal	Idallen Star 53461	Percheron
3536	Mac Clemons & Son	Mt. Ayr	Iowa King 8677	Trotter

SAC COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
166	Neal Hoskins	Sac City	Taupin 31611 (48997)	Percheron
775	C. Christiansen	Early	Bolie 8313	Shire
781	Wall Lake Horse Co.	Wall Lake	Joubert De Vynckt 2165 (33306)	Belgian
825	B. F. M. Rose	Auburn	Couquet V. 11073 (14186)	Percheron
829	W. C. Abney	Auburn	Brilliant II 1373	Belgian
874	H. H. Mead	Early	McBurney 23098	Trotter
1066	Odebolt Horse Co	Odebolt	Hector 2005 (30020)	Belgian
1152	Joel Johnson	Wall Lake	Brilliant 23677	Percheron
1180	O. A. C. Horse Co	Odebolt	Colenso de Jandre 1467 (25376)	Belgian
1373	W. C. Abney	Auburn	Chitorney 34369	Trotter
1513	Jerry Bell	Early	Frasier 10812	Clydesdale
1514	W. A. Helsell	Odebolt	Observation 38614	Trotter
1523	W. T. Scott	Early	Cornepic 1144 (17878)	Belgian
1524	W. T. Scott	Early	Rosier 13678 (53863)	Percheron
1582	N. A. Hanken	Sac City	Rosa's Prince 11082	French Draft
1600	Wm. Schade	Odebolt	Prince 23342	Clydesdale
1671	A. P. Jacobsen	Lake View	Warbler 3026 (10716)	Percheron
1715	J. P. Goreham	Odebolt	King of Plainfield 9655 (44547)	Shire
1747	Boyer Valley Horse Co.	Early	Beaumont 31365 (48667)	Percheron
1746	Early Shire Horse Co.	Early	Stenigot Cracksmann 5871 (18376)	Shire
2100	Nemaha Horse Co	Nehama	Moliere 24460 (43666)	Percheron
2117	Ben McMartin	Odebolt	Mobyrne 0764	Trotter
2187	J. P. Wollesen	Lake View	Cristal II 2408 (Vol. 13, p. 932)	Belgian
2188	J. P. Wollesen	Lake View	Ralph II 8776	Shire

SAC COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2317	Herman Dreessen & Henry Wollenberg	Wall Lake	Gilbert 20416	Percheron
2408	Wm. Hinde	Early	Clipser 9097	Clydesdale
2677	J. J. Toop	Auburn	Jumbo 42656	Percheron
2846	Donald McCorkindale	Odebolt	Baron of Odebolt 12400	Clydesdale
2948	Henry Bowman	Coon Rapids	Brisse 6877 (2057)	French Draft
2966	L. H. Davenport	Odebolt	Keota Cyrus 19470	Percheron
2992	Jos. Mattes	Odebolt	Lofty of Odebolt 10438	Clydesdale
3026	Corsant Bros.	Sac City	Salesbury Conqueror 5384 (17590)	Shire
3038	T. G. Keir	Sac City	Agartam 31233	Percheron
3075	T. W. Down	Odebolt	Colonel D. 11764	Clydesdale
3081	L. C. Pilloud	Sac City	Robroy K. 44916	Percheron
3177	T. G. Keir	Sac City	Prince Jr. 34959	Trotter
3351	J. J. Toop	Auburn	Fruen 44907	Percheron
3346	John Currie	Odebolt	Roosevelt 6319	Shire
3443	Joe Henaman	Schaller	Le Duc 31434 (45370)	Percheron
3639	J. Kessler	Auburn	Captain Trotter 44577	Trotter
3702	Murphy & Oldnettle	Wall Lake	Beauceron 51233 (62454)	Percheron
3961	L. L. Goreham	Odebolt	Chillingham 45944	Percheron
3962	Odebolt Percheron Horse Co.	Odebolt	Reveur 47065 (63816)	Percheron
3992	W. H. Pettis & S. L. Hawley	Sac City	Baron La Follette 42565	Trotter
4040	G. W. Little	Early	Regolia 15405	French Draft
4309	C. J. Hinkley	Odebolt	Voltigeur 40999 (56177)	Percheron
4330	Donald McCorkindale	Odebolt	Prince of Balloch Roy 13028	Clydesdale
4399	W. C. Abney	Auburn	Togo 49822	Percheron
4434	Chas. Anderson	Sac City	The Illustrator 31800	Trotter
4471	Joshua J. Spicer	Sac City	Bristol II 892	Belgian Draft
4983	Hugh H. Mead	Early	Gray Light 14863	Trotter
3111	D. Treadway	Wall Lake	Morgan Star 32926	Trotter
5035	Nuehring Bros.	Lytton	Rommeo 25025 (43448) 15925	Percheron and French Draft

SCOTT COUNTY

537	Adolph Muhs	Davenport	Pantheon 25169 (44645)	Percheron
516	W. A. Barr	Davenport	Claudius 212	Oldenburg Coach
875	Henry Schlotfeldt	McCausland	Banquet 6381	Trotter
1323	Kirk Bros.	Davenport	Midnight A. 33409	Trotter
1392	E. T. Smith	Davenport	Baron Patchen 28900	Trotter
1434	The Princeton Percheron Horse Co.	LeClaire	Veilleur 28192 (46864)	Percheron
1496	August Richter	Davenport	Patchen Seal 37941	Trotter
1409	G. A. Smith	Big Rock	Extrador III 6958 (11224)	Percheron
2107	F. Raasch	McCausland	Black Prince 14149	French Draft
944	Princeton Horse Co.	Princeton	Bruno (33784)	Belgian
2239	McCausland Percheron Draft Horse Co	McCausland	Picador 41521 (56945)	Percheron
2256	A. F. Oldenburg	Davenport	Lebel 41517 (61571)	Percheron
2701	E. T. Smith	Davenport	The Lad 44769	Trotter
3280	McCausland French Coach Horse Co.	McCausland	Telegramme 2400	French Coach
4182	C. F. Henderson	Moscow	Colonel 20816	Percheron
1963	Chas. J. Dahm	Dixon	Eclat 55021 (63212)	Percheron
5412	Albert Tullis	Davenport	Doctor Sheldon 42782	Trotter

SHELBY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
737	W. H. Meyer	Corley	W. J. Bryan 2389	French Coach
195	Pleasant Twp. Horse Co.	Shelby	Eperon 34511 (46452)	Percheron
307	Geo. McCamly	Harlan	Davy E. 32886	Trotter
308	T. J. Wyland	Harlan	Bob 29180	Percheron
309	T. J. Wyland	Harlan	Normandy 16673	Percheron
482	Indian Valley Horse Co.	Elkhorn	Organiste D Sartalard 1755 (24424)	Belgian
57	L. C. Donahue	Corley	Dewey 9732	French Draft
1061	R. C. Rasmussen	Harlan	Dandy 11151 (22565)	French Draft
1204	C. W. Best	Shelby	Moutonnet 7475	Percheron
1248	Shelby Draft Horse Co.	Shelby	Guignol 26112 (46826)	Percheron
816	Harlan Percheron Horse Co.	Harlan	Logeur 40140 (46372)	Percheron
1283	J. R. Debord	Harlan	Morgan Wilkes 4672	Morgan
1368	W. T. Plummer	Harlan	Tremolo Junior 16590	Percheron
1433	Tennant Horse Co	Tennant	Rangeur 34501 (47518)	Percheron
2585	E. F. Morris	Harlan	Byrondale 42296	Percheron
2921	Cass Carter	Harlan	Stuntney Menander 7928 (22824)	Shire
736	Jno. Klinkefus	Irwin	Santa Anne 30971	Percheron
2993	Frank Faltenson	Irwin	Emile 376 (2338)	Belgian
3044	J. A. Kastner	Defiance	Lee Onward 30166	Trotter
3051	C. W. Best	Shelby	Raglan II 8549 (21778)	Shire
3083	L. H. Pickard	Harlan	Capo 31066	Trotter
3238	J. M. Mayer	Defiance	Rosier 26144 (40778)	Percheron
3291	Aaron E. Potter	Irwin	Stand Back 3047 (8306)	Shire
2250	Caus Kenkle	Earling	Happy Boy 50842	Percheron
4034	T. J. & H. O. Wyland	Kirkman	Gringalet 50724 (68210)	Percheron
4238	W. D. Schlensig	Defiance	Bucephalus 49611	Percheron
3676	N. P. Booth	Harlan	Mazzola 41298	Trotter
4568	Mat Friend	Earling	Spring Up 51728	Percheron
77	Klinkefus Bros.	Irwin	Aconit 1211 (13440)	Belgian
5283	Peter Rasmussen	Shelby	Courtois 41518 (61881)	Percheron

SIOUX COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
10	H. B. Smith	Ireton	Bob Lockheart 36369	Trotter
1347	Traverse Parker	Ireton	Charnyctzki 23028	Percheron
1428	W. H. Irwin	Ireton	Gros-Loup 10258 (13641)	Percheron
1472	Henry Kokenge	Alton	Strathilson 9427 Vol. XIV	Clydesdale
1620	Gradus Kower	Alton	Rudolph 41321	Percheron
1633	Gerrit Klock	Sioux Center	Involvo Jr. 21642	Percheron
1650	Henry Grotenhuis	Hosper	De Ranger 32670	Trotter
2312	Jacob Minton	Rock Valley	Don Arno 25564	Trotter
233	T. C. Parker	Ireton	Prince Robert 2d 11837	Clydesdale
2440	Peter Hansen	Alton	Babolin 14860 (58372)P	French Draft
2968	P. W. Moir	Orange City	Merveileux 48136 (59205)	Percheron
2970	P. W. Moir	Orange City	Toreador 46269	Percheron
2971	P. W. Moir	Orange City	Sandow 2971	Percheron
2972	P. W. Moir	Orange City	Julien 28951	Percheron
2973	P. W. Moir	Orange City	Gascoigne 29734	Percheron
2974	P. W. Moir	Orange City	Colonel Dickey 38955	Trotter
3330	John Fanning	Maurice	McMahon 21349	Percheron
3385	Sheridan Belgian Horse Co.	Boyden	Vengeur II 1458 (25418)	Belgian
3511	B. Van der Berg	Sioux Center	Bernice 25462 (43578)	Percheron
3519	Thos. Chew	Hawarden	Bollon 23386 (43267)	Percheron
2170	Nick Hulst	Alton	Celestin 28189 (43772)	Percheron
4008	K. H. DeJong	Orange City	Knockdhu 9716 (10790)	Clydesdale
4100	John Fanning	Maurice	Allards Calypso 45723	Percheron
4249	H. F. Kluender	Granville	Lambert 51873 (60121)	Percheron
4389	E. B. Koppert	Chatsworth	Enorve 16426 (64937)	Percheron
4476	Joe Verdorne Jr.	Rock Valley	Victor 33301	Percheron
4561	P. B. Vosburg	Granville	Sirocco 51891 (62797)	Percheron
4832	Wolf Bros.	Alton	Volney 16345 (66669)	French Draft
3250	Herman Heeren	Ireton	Morrell 40932	Percheron
3292	J. H. Kreykes	Hospers	Saxon Billy 9026 (20882)	Shire
5408	Peter Hennink	Rock Valley	Quimper 36884	Trotter

STORY COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
64	Thos. Swalwell	Collins	King of the West 10156	Clydesdale
113	H. C. Denniston	Collins	Keota Flanders 33462	Percheron
192	Geo. Connolly	Nevada	Louvrain 2337	French Coach
194	Geo. Connolly	Nevada	Iams' Plunnger 9967 22470	French Draft Percheron
76	Kelley Horse Co.	Kelley	Apres 25057 (44752)	Percheron
79	Maxwell Horse Breeders' Ass'n	Maxwell	Buffalo 23223 (43555)	Percheron
530	T. O. Savim	Roland	Laspaille 28692 (45687)	Percheron
725	J. W. Ogle	Ames	Deacon 45311	Percheron
780	C. W. Scott	Cole	Triboulet 816	Belgian
779	C. W. Scott	Cole	Hobson 41722	Belgian
861	Howard Township Horse Co.	Roland	Seduisant 28161 (45033)	Percheron
988	Zearing Percheron Horse Co.	Zearing	Monopole 13364	French Draft
1326	A. Van Stenberg	Story City	Castor D' Hulste (Vol. XII, p. 861)	Belgian
1377	Oliver Cole	Roland	Keota Bostedo 20643	Percheron
1408	S. B. Frey	Ames	Milford 10590 (25224)	Percheron and French Draft
1407	S. B. Frey	Ames	Montelle 25223 9270	French Draft and Percheron
1406	S. B. Frey	Ames	Jean L 13370	French Draft
1420	Story Percheron Horse Co.	Roland	Vainqueur 30442 (46877)	Percheron
1446	La Fayette Percheron Horse Co.	Gilbert Station	Cacatoes 31128 (45723)	Percheron
1688	M. J. Nelson	Cambridge	Blaisdon Brilliant 7906 (21147)	Shire
1805	H. C. Davis	Ames	Soliman 21281 (43227)	Percheron
2120	J. H. Boyd	Ames	Delamere B. P. 6510 (18671)	Shire
2186	S. J. B. Johnson	Ames	Kazek 39781	Trotter
2142	Zearing Belgian Horse Co.	Zearing	Demblon 1152 (13394)	Belgian
2396	N. A. Stimson	Zearing	Alexander 41415	Percheron
2207	C. A. Jerdeman	Story City	Mastodonte 2597 (Vol. 13, p. 292)	Belgian
2640	Iowa State College	Ames	Etradegant 40553 (55321)	Percheron
2641	Iowa State College	Ames	Refiner 12116	Clydesdale
2693	H. C. Davis	Ames	Babe 15358	French Draft
2694	H. C. Davis	Ames	Jolif 46154 (60214)	Percheron
2537	H. C. Lowrey	Nevada	Mazeppa 41840	Percheron
3152	F. C. Gearhart	Ames	Royal 5354	Morgan
3261	H. C. Davis	Ames	Nero 47448	Percheron
1432	M. L. Nutty	Nevada	Condor 44607	Percheron
2048	Chas. H. Sawtell	Colo	Aimable 41427 (64642)	Percheron
3613	Fred Holtby & Grant Bates	Collins	Stow Regent 8866 (21915)	Shire
3649	Geo. W. Bull	Zearing	Moulton VI 41981	Percheron
2392	Smalley & Nicks	Gilbert Station	Paulin II (15960)	Belgian
3693	Amos Hanson	Collins	Monarch 16210	French Draft
3695	Robt. L. Neese	Collins	Marquis 41512 (64037)	Percheron
1741	Shaw Bros.	Maxwell	Spartan's Hero 8428	Shire
4022	M. J. Nelson	Cambridge	Royal Victor 42182	Percheron
4073	S. B. Frey	Ames	Moneill 45590	Percheron
4130	F. A. Smith	Nevada	Maraicher 51875 (65504)	Percheron
4212	Samuel Etnier	Colo	Black Hawk 41953	Percheron
4213	Arthur Etnier	Collins	Acorn 42405	Percheron
4214	Arthur Etnier	Collins	Jermiah 44690	Percheron
4314	John W. Bloomfield	Maxwell	Clemont 47173	Percheron
4504	D. A. Cannon	Colo	Black Star 42431	Percheron
4528	Iowa Agricultural College	Ames	Dappled Tom 9137 (24807)	Shire
4529	Iowa Agricultural College	Ames	Kuroki 13214	Clydesdale
4530	Iowa Agricultural College	Ames	Don Edwood 27131	Trotter
4540	Iowa Agricultural College	Ames	Chambord 42104 (61803)	Percheron

STORY COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4565	Bishop & Finkham	Gilbert Station	Fifer 54673	Percheron
4775	Harley Barnes	Ames	Ormont 30875	Trotter
1185	Cogshall & Dawson	Cambridge	Comet 696	French Draft
4962	J. A. Taylor	Ames	Grecourt 42819 (70640)	Percheron
4961	John Moran	Nevada	Garant 42829 (70510)	Percheron
4966	L. J. Baird	Ames	Rossignol Jr. 1937	Belgian
3877	C. A. Jerdeman	Story City	Galopin 42388 (65122)	Percheron
3164	R. Bonde	Story City	Hercules 27268	Percheron
5189	S. B. Mills	Ames	Dr. Strawn 5553	Morgan
3001	E. J. Brouhard	Colo	Wilbrino Boy 37459	Trotter
5388	T. J. Pollock	Zearing	Aegon 6994	Trotter
5389	T. J. Pollock	Zearing	Prince Allerton 29546	Trotter
5390	T. J. Pollock	Zearing	Bobbie Wilkes 4316	Trotter

TAMA COUNTY

147	Geo. Niemand	Traer	Teddy R. 23923	Percheron
133	Jos. E. Axon	Traer	Roan Charlie 11440	Clydesdale
116	W. A. Speer	Buckingham	Timonnier 30406 (52771)	Percheron
232	Jas. Morgan	Traer	Ailsa's Pride 11443	Clydesdale
231	Jas. Morgan	Traer	Prince Archer 11458	Clydesdale
302	Z. T. Moore	Traer	Dewey Day 34091	Trotter
49	Geo. Walz	Tama	Cataline 40918	Percheron
30	Toledo Draft Horse Co.	Toledo	Philibert 40402 (51574)	Percheron
566	I. D. Magowan	Tama	Lewis Templeman 32809	Trotter
567	I. O. Magowan	Tama	Cedric 7185	Shire
31	Toledo Draft Horse Co.	Toledo	T. H. M. 38691	Trotter
546	Jno. M. Bicket	Traer	Newton Quality 6919	Shire
698	H. W. Rueppel	Dysart	Rantanglar 6005	French Draft
619	Chas. Vanbel	Dysart	Otter Bank 12310	Clydesdale
728	Traer Percheron Horse Co.	Traer	Introuvable 24765 (46658)	Percheron
1018	Jno. Tiedje	Gladbrook	Roseau 24547 (44327)	Percheron
891	G. J. Monroe	Dysart	Brown Trippe 33669	Trotter
873	Jacob Ulstad	Dysart	Contest Day 43340	Trotter
872	A. R. Wilson	Traer	Judge Lockheart 43416	Trotter
1126	T. A. Green	Toledo	Trappy A. G. 43523	Trotter
1294	J. W. Sackett	Clutier	Black King 20947	Percheron
1295	J. W. Sackett	Clutier	Gilbert 12454	French Draft
1594	Peter Grenewalt	Elberon	Printemps 34022 (51524)	Percheron
1595	Peter Grenewalt	Elberon	Riverside 25580	Percheron
1763	Clutier Horse Co.	Clutier	Colin 26156	Percheron
1812	Frank Landt	Gladbrook	Charming Gift 10079 (11006)	Clydesdale
2325	W. H. Sprole	Traer	Deacon 45965	Percheron
2357	Joe Krezek	Clutier	Bayard 20135	Percheron
2405	Jacob Ulstad	Dysart	Vyzantum 37703	Trotter
2406	G. W. Mowers	Dysart	Henry G. M. 37552	Trotter
2450	Hildebrand Bros.	Gladbrook	Major Luy 2310 (29320)	Belgian
2898	Henry Voege	Berlin	Bury Valiant 8870 (24107)	Shire
2941	Montour Percheron Horse Co.	Montour	Kabyle 24761 (44167)	Percheron
3069	H. L. M. & N. C. Bruner	Toledo	Frodoard 47115 (61993)	Percheron
3168	Dysart Horse Co	Dysart	Iphis 20047	Percheron
3193	Percheron Horse Co.	Dysart	Crux 29266 (45146)	Percheron
3198	E. F. Brennen	Dysart	Forfait's Best Son 23338	Percheron
3199	E. F. Brennen	Dysart	Richard 23343	Percheron
3237	J. G. Poshajsky & E. J. Stayaskal	Toledo	Raven Nation 12655	French Draft
3315	Oris Pryne	Elberon	Nicollet 17074	Trotter
2081	Belgian Horse Co.	Dysart	Boulevard 2284 (33706)	Belgian
3540	Wm. F. Nation	Buckingham	Timonnier Jr. 15621	French Draft
3227	Nettie Goodwin	Tama	Sam T. 41407	Trotter
3934	J. D. Filloon	Toledo	Severn Melton 8931 (23693)	Shire

TAMA COUNTY—Continued

Ce No.	Name of Owner	Postoffice	Name of Stallion	Breed
3964	Wm. Struve	Elberon	Fidol Chief 30331	Trotter
4140	Otto Kleppein	Clutier	Javelot 51432 (58875)	Percheron
4123	James Morgan	Traer	Prophet 13167	Clydesdale
4122	James Morgan	Traer	Tama Jim 12225	Clydesdale
4121	James Morgan	Traer	Prince Henry 10645	Clydesdale
1867	Chas. Luthje	Garwin	The Baron VII (23930)	Shire
4238	J. C. Bradley	Garwin	Alvechurch Heirloom 9618 (23950)	Shire
721	O. H. Morford	Chelsea	Congo (21578)	Belgian
4420	A. R. Fox	Elberon	Raven 53033	Percheron
4421	A. R. Fox	Elberon	Pompey 42383	Percheron
4430	J. W. Manatt	Chelsea	Porthos X 861	Belgian
4431	J. W. Manatt	Chelsea	Prince 1025	Belgian
4507	Prudhomme Horse Co.	Buckingham	Prudhomme 48664 (63701)	Percheron
4576	Schroeder & Schmidt Bros.	Tama	Bruce 42193	Percheron
4577	Geo. Harrington	Garwin	Burt 49707	Percheron
655	Chas. Applegate	Toledo	Ailsa Again 10374	Clydesdale
1120	H. H. Hild	Traer	Coad 41029	Percheron
4981	Bruner & Bruner	Toledo	Mercury 4028	French Coach
2409	Frank Lant	Garwin	Patrique 40790	Percheron
383	O. H. Morford	Chelsea	Wentz 31735	Trotter
1717	Frank Lant	Garwin	Allendale 28588	Percheron
5097	J. D. Fillon	Toledo	Grillant 57549 (72648)	Percheron
5114	J. H. Stoddard	Tama	Prince Doyden 17808	French Draft
5175	Dysart Horse & Jack Co.	Dysart	Courageux 54552 (60314)	Percheron
3556	T. G. & W. A. Graham	Chelsea	Invador 41729	Trotter
1520	O. H. Morford	Chelsea	Silver King 59281	Percheron
5385	F. L. Andley	Chelsea	Colored Gentleman 23944	Percheron

TAYLOR COUNTY

377	Frank Stanley	Gravity	Compeer 9649	Clydesdale
376	W. H. Pfander	Sharpsburg	Lucky Lad 40471	Percheron
365	E. T. Philpott	Sharpsburg	Bedford 25620 (19170)	Percheron
364	E. T. Philpott	Sharpsburg	Blucher 35377	Percheron
845	E. T. Philpott	Sharpsburg	Alfonso 40770	Percheron
843	E. T. Philpott	Sharpsburg	Stanley 27743	Percheron
47	E. T. Philpott	Sharpsburg	Milo 40771	Percheron
1762	E. T. Philpott	Sharpsburg	Hiawatha 41275	Percheron
349	J. S. Hanshaw	Bedford	Brilliant 28679	Percheron
345	G. W. Page	Lenox	Chasseur 32831 (46217)	Percheron
344	G. W. Page	Lenox	Mingo Chief 0666	Trotter
305	E. W. Hardenbrook	Bedford	Herschel Rysdyke 31325	Trotter
325	J. S. Stimson	Gravity	Nuxwood 38735	Trotter
306	Jno. Curphey	Lenox	Iroquois 34600	Percheron
356	W. H. Payton	Bedford	Soudeur 28688 (25700)	Percheron
464	Thos. McClintock	Lenox	Sultan 33195	Percheron
519	Grove Township Horse Co.	Lenox	Lime Kiln Tom 7595 (21599)	Shire
33	Newton Rhoades	Lenox	Ernst 41867 (57131)	Percheron
20	Warren O'Dell	Gravity	Ottoman Chief Jr. 34343	Trotter
492	Dr. Wm. Readhead	Lenox	Ax Dowell 40369	Trotter
491	Dr. Wm. Readhead	Lenox	Exbird 39999	Trotter
586	J. J. Knox	Clearfield	General Scott 30497	Percheron
584	G. D. Hazen	Bedford	King of All 30169	Percheron
427	Charles Bean	New Market	Denain 32428 (47543)	Percheron
683	J. M. Long	Lenox	Antrione 43073	Trotter
613	G. D. Bix	Bedford	Gabels Black Prince 5751	Shire
745	State Road Horse Co.	Bedford	Langton Napoleon 5749 (18140)	Shire
750	Clark Armstrong	Lenox	King Purquois 45053	Percheron

TAYLOR COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
749	Clark Armstrong	Lenox	Bob Orr 25424	Trotter
760	W. W. Kirby	Gravity	Major Genese 1250 (18802)	Belgian
808	The Morning Star Percheron Horse Co.	Bedford	Rudolph 17323	Percheron
852	Wise, Ray, Miller Horse Co.	New Market	Picador 27854 (46930)	Percheron
850	John Curphey	Lenox	Sir Clinton 45309	Percheron
844	E. T. Philpott	Sharpsburg	Comet II 40520	Percheron
846	E. T. Philpott	Sharpsburg	Lamont 40507	Percheron
848	E. T. Philpott	Sharpsburg	Laureat 32670 (46176)	Percheron
1086	Pierce Wheeler	Gravity	Keota Captor 21661	Percheron
1097	J. A. Hamilton	Bedford	Lord Bancroft 7040	Shire
1006	Phil Slattery	Lenox	Kid McCloy 9228	Clydesdale
993	S. A. Dowell	Conway	Lafleur De Wortghem (33292)	Belgian
1192	Gravity Draft Horse Co.	Gravity	Bonneval 25437 (45405)	Percheron
1247	Clearfield Horse Improvement Co	Clearfield	Samory 26551 (43742)	Percheron
1273	J. T. Dunlap	Lenox	Baron Lockhart 9699 (10685)	Clydesdale
1356	E. M. Patton	Clearfield	Chestnut Sprague 35366	Trotter
1338	A. D. Robey	Conway	Sir Hugo 6378 (20028)	Shire
1375	C. H. Chamberlain	Bedford	Humbert de Pomm 2052 (23192)	Belgian
1431	J. A. Hamilton	Bedford	Gold-Dust 50237	Percheron
1534	W. P. Oliver	Lenox	Girton Tom 6390	Shire
1669	Harry Allen	Hopkins, Mo.	Earl of Dunbar 10631	Clydesdale
1719	S. E. Robinson	Conway	Fanfulla 2238 (32794)	Belgian
1761	E. T. Philpott & Co.	Sharpsburg	Fauntleroy 41237	Percheron
1839	H. N. Ray	Ladoga	Teddy 15097	French Draft
1838	H. N. Ray	Ladoga	Blain 15098	French Draft
2130	Blockton Percheron Horse Co.	Blockton	Joubert 25816	Percheron
2150	Blockton Horse Co.	Blockton	Jupiter 10848 (921)	French Draft
2285	S. & W. W. Hartzler	Bedford	De Leon 42043	Percheron
2299	Dr. O. T. West	Conway	Homere 42597	Trotter
2499	J. D. Barrans	Clearfield	Stuntney Expectant 5374	Shire
2472	Herbert Peak	Lenox	Norvent Boy 39707	Trotter
2726	M. M. Spurgeon	Bedford	Accorte 14854 (59933)P	French Draft
2772	J. E. Anderson	Conway	Hercule II 920	Belgian
2773	J. E. Anderson	Conway	Joseph 42238	Percheron
2774	J. E. Anderson	Conway	Conway Sully 42240	Percheron
2843	Fine Bros.	New Market	Prime Minister 5166	Shire
2308	E. E. Leighton	New Market	Maxime 50658 (59942)	Percheron
2939	J. N. Nichols	Clearfield	Captain Jinks 11103	French Draft
3124	W. H. Payton	Bedford	Perfection 44731	Percheron
3125	W. H. Payton	Bedford	Pink Paragon 43929	Percheron
2131	W. H. Price	Gravity	Jupiter Jr. 15031	French Draft
1385	W. H. Robinson	Bedford	Banker 50290	Percheron
3403	H. Davidson	New Market	Major 6577	Shire
3461	S. N. Bristown	Bedford	Victor 44734	Percheron
3482	H. M. Long	Bedford	Favorite Herschel 45441	Trotter
3633	J. E. Barkhurst	Clearfield	Botha de Leoten (33020)	Belgian
3849	E. E. Leighton	New Market	Black Boulder 50252	Percheron
3861	E. T. Philpott	Sharpsburg	Laurent 33171	Percheron
3860	E. T. Philpott	Sharpsburg	Banker 51538	Percheron
3859	E. T. Philpott	Sharpsburg	Royal Boy 51055	Percheron
1680	E. T. Philpott	Sharpsburg	Leduc 23313	Percheron
343	Clarke Grace	Bedford	Castellan 40144 (52911)	Percheron
3933	C. B. Atkin	Lenox	MacCloy Jr. 9218	Clydesdale
4055	W. H. Robinson	Bedford	Geron 2846 (41868)	Belgian
4223	J. A. Hamilton	Bedford	Bara 2843 (41866)	Belgian
4197	Wm. Redhead	Lenox	Colonel McDowell 44536	Trotter
4170	Elmer Crum	Blockton	William McKinley 30215	Percheron
4294	J. J. Mercer	Lenox	Lieutenant 25544	Percheron
4293	J. J. Mercer	Lenox	Mokrani 29835	Percheron
4325	H. M. Long	Bedford	James 51101 (67494)	Percheron
4327	E. E. Leighton	New Market	Lucky Strike 50240	Percheron

TAYLOR COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4363	J. P. Lininger	Lenox	Dexter 16622	French Draft
350	Churchill & Dougherty	Bedford	Tatton Navigator 6990 (19170)	Shire
4439	J. M. Long	Lenox	Garnetwood 47852	Trotter
4445	E. T. Philpott	Sharpsburg	Blande II 41661	Percheron
4446	E. T. Philpott	Sharpsburg	French Monarch 16980	French Draft
4447	E. T. Philpott	Sharpsburg	Success 41708	Percheron
4448	E. T. Philpott	Sharpsburg	Gay Lad 41663	Percheron
4449	E. T. Philpott	Sharpsburg	Orphan Boy 42849	Percheron
4450	E. T. Philpott	Sharpsburg	Theodore 42490	Percheron
4451	E. T. Philpott	Sharpsburg	Sargent 35369	Percheron
4452	E. T. Philpott	Sharpsburg	Coco 51614	Percheron
4453	E. T. Philpott	Sharpsburg	Black Percheron 51201	Percheron
4454	E. T. Philpott	Sharpsburg	Sargeant 50690	Percheron
4455	E. T. Philpott	Sharpsburg	Success 50705	Percheron
4456	E. T. Philpott	Sharpsburg	Bedford 42319	Percheron
4457	E. T. Philpott	Sharpsburg	Black Joe 50691	Percheron
4458	E. T. Philpott	Sharpsburg	Jean Le Blanc 41706	Percheron
4459	E. T. Philpott	Sharpsburg	Teddie Boy 51579	Percheron
4460	E. T. Philpott	Sharpsburg	Blande II 51613	Percheron
4461	E. T. Philpott	Sharpsburg	Brilliant 42538	Percheron
4462	E. T. Philpott	Sharpsburg	Stuntney Prince 9690	Shire
4463	E. T. Philpott	Sharpsburg	Sharpsburg Warrior 9077	Shire
4547	E. M. Patton	Clearfield	Nicholas 45051	Percheron
4548	E. M. Patton	Clearfield	Pourquoi Jr. 45054	Percheron
2880	Margason & Cunning	Gravity	Comedien 50855 (61758)	Percheron
3421	G. D. Bix	Bedford	Rampton Criterion 8582 (23922)	Shire
4362	James Hayes	Lenox	Hugh Bennett 50269	Percheron
4907	O. E. Spencer	Bedford	Bosket 48657	Percheron
4785	W. H. Pfander	Sharpsburg	Bergerat 12375 (51725)	French Draft
5017	Meredith & Son	Gravity	Coco 3263 (46578)	Belgian
2862	Grant Twp. Horse Co.	Clearfield	Bravo 13679 (60443) P.	French Draft
5133	Terrill & Mosier	Blockton	Black Brilliant 40889	Percheron
5152	H. M. Long	Bedford	Seigmund 5027	German Coach
5153	H. M. Long	Bedford	Baron de Reves 3772 (43656)	Belgian
5323	Fred Miller	New Market	Blobula 52291 (71045)	Percheron
5372	Gordon & Richard	Lenox	Mouton de Waterloo 3844 (Vol. 15)	Belgian
5417	Gordon & Richard	Lenox	Radius 52053 (65823)	Percheron
5391	J. T. Dunlap	Lenox	Waldersley Commodore 9624 (25738)	Shire

UNION COUNTY

569	R. C. Holland	Afton	Judge Towner 19419	Trotter
61	Taylor Kilgore	Cromwell	Mongol 42230 (52132)	Percheron
40	R. J. Ross	Cromwell	Creston Royal 4942	Shire
709	A. Latimer Wilson	Creston	Villebon 10529 (14471)	Percheron
710	F. L. Streams	Creston	Plainview Dignity II 6389	Shire
611	C. N. Paulson	Lorimor	Coco 22406	Percheron
610	C. N. Paulson	Lorimor	Gentleman Joe 6181	Shire
416	C. G. Webb	Afton	Lethbridge 7713	Shire
753	Sadler & Brown Bros.	Creston	Souverain 41195 (52467)	Percheron
762	W. R. Henderson	Afton	Moscow 25509 (42605)	Percheron
799	T. A. Stevenson	Shannon City	Iowa Champion 7286	Shire
856	G. E. Reetz	Cromwell	Redea 4557	Morgan
805	D. J. Gibbons	Cromwell	Ravenwood 8339	Shire
806	D. J. Gibbons	Cromwell	Gibbons Charger 6968	Shire
1053	W. J. Stalcup	Lorimor	Romulus 44892	Percheron
1044	G. W. Stream	Spaulding	Prince of Wales 6725	Shire
1140	S. J. Bayles	Cromwell	Slasher 40401	Percheron
1139	S. J. Bayles	Cromwell	Banker II 7635	Shire
1260	B. E. Carter	Creston	Grayson 19436	Trotter
1340	E. Fugier	Creston	Senator 41137	Percheron
1341	E. Fugier	Creston	Percheron Chief 41106	Percheron

UNION COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1342	E. Fugier	Creston	Chestnut Baron 8108	Shire
1343	E. Fugier	Creston	Hakes' Prince 5551 (18778)	Shire
804	M. Iams & Co.	Lorimor	Medley Rex 37730	Trotter
1605	C. L. Waltz	Spaulding	Stuntney Airlie 8922 (22965)	Shire
1621	G. L. Reed	Kent	Sultan 45135 (45824)	Percheron
1635	C. D. Riggs	Spaulding	Iowa Prince 4541	Morgan
1703	H. Y. Lupher	Lorimor	Prince Albert II 15831	French Draft
1766	G. W. Stream	Spaulding	Modock 41255	Percheron
1798	Grant Hubble	Kent	Lofty Yet 9915	Clydesdale
2027	F. L. Stream	Creston	Lucky Lad 8182	Shire
2320	W. R. Wilson	Arispe	Duke of Marlborough 19540	Percheron
1856	H. H. Jeter	Thayer	Boileau 50422 (60014)	Belgian
2484	G. W. Bilbo	Creston	Colonel Beaumont 7905	Shire
2655	M. E. Thompson	Afton	Custerwood 43445	Trotter
2671	A. T. Worsley & Sons	Kent	Valerien 47985 (58032)	Percheron
2473	J. H. Garrels	Thayer	Lemaire 860	French Coach
2570	Shannon City Percheron Horse Co.	Shannon City	Otta 40387	Percheron
2754	A. L. Wilson	Creston	Edward VII 5931 (Vol. 25)	Shire
1052	L. L. Stoner	Afton	Maroc 14130	French Draft
555	David Miller	Spaulding	Bon Ami 4639	Shire
2861	J. J. Thompson	Afton	Greenwood 28150	Trotter
2911	J. H. Garrels	Thayer	Preval 14185	Percheron
2909	Ed Hupp	Afton	Calvin 11535 (20017)	Percheron
2928	E. F. & F. L. Sullivan	Afton	Trumans Surprise 7342	Shire
2953	G. W. Bilbo	Creston	Keck 6575	Shire
2952	G. W. Bilbo	Creston	Crown Prince 8000	Shire
2960	L. M. Cherrington	Creston	Prime 2415 (36859)	Belgian
2980	F. L. Stream	Creston	Sport 13731	French Draft
3128	Gale McCall	Lorimor	Major D' Ob 2531 (Vol. 8, p. 480)	Belgian
3157	G. S. Reetz	Cromwell	Sostene 50865 (62597)	Percheron
3333	A. Latimer Wilson	Creston	Bedwell Marquis 8326 (22101)	Shire
3348	Stream & Wilson	Creston	Frimas 50957 (61646)	Percheron
3411	Frank A. Ide	Creston	Monteith 31604	Percheron
3412	Frank A. Ide	Creston	Boulder 46527	Percheron
3413	Frank A. Ide	Creston	Major 46526	Percheron
3414	S. H. Wright	Afton	Linton Executor 5654 (17449)	Shire
3497	Geo. W. Bilbo	Creston	Roy Hazelton 9064	Shire
3498	Geo. W. Bilbo	Creston	Banker Boy 9066	Shire
3500	Geo. W. Bilbo	Creston	Rex Beaumont 9063	Shire
3599	D. J. Gibbons	Cromwell	Irvington 8857	Shire
3628	Geo. W. Bilbo	Creston	Hugh Roderic 49519	Percheron
3629	C. G. Webb	Afton	Cool Brilliant 49520	Percheron
3686	B. Whitworth	Afton	Brilliant's Model 22404	Percheron
3768	Frank L. Stream	Creston	Popaint 51370 (66729)	Percheron
3800	John Kilgore	Cromwell	Diavolo 51372 (65407)	Percheron
3931	Geo. W. Bilbo	Creston	Vallor 50284	Percheron
3932	Geo. W. Bilbo	Creston	Dick Ryan 50266	Percheron
3933	Geo. W. Bilbo	Creston	Conquor 50270	Percheron
3957	Frank A. Ide	Creston	Theodore 49700	Percheron
3993	H. C. Schroder	Creston	Black Diamond 48619	Percheron
4023	G. W. Stream	Creston	Butor 42543 (62531)	Percheron
386	J. P. Cromwell	Shannon City	J. W. 11125	French Draft
4048	Geo. W. Bilbo	Creston	Prosper 48070	Percheron
4049	Geo. W. Bilbo	Creston	Logan 50280	Percheron
4051	Geo. W. Bilbo	Creston	Monarch 50278	Percheron
4052	Geo. W. Bilbo	Creston	Pagoda 50276	Percheron
4144	G. W. Welling	Afton	Carnegie 52683	Percheron
4204	Loubet Horse Co.	Thayer	Loubet 23440 (45383)	Percheron
4195	H. P. Bagg	Afton	Greenwood, Jr. 43439	Trotter
4184	G. W. Welling	Afton	Bicot 54380 (66825)	Percheron

UNION COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4183	A. Latimer Wilson	Creston	Inval 2847 (41890)	Belgian
4250	L. M. Cherrington	Creston	Mayeur 2849 (37210)	Belgian
4251	Wm. Downs	Creston	Aiglon 2841 (41858)	Belgian
1005	Geo. W. Bilbo	Creston	Doctor Lad 26340	Percheron
4304	D. J. Gibbons	Cromwell	Bamboo's Wonder 9719	Shire
4394	C. W. Harkness	Creston	Tions Bon 2474	French Coach
4397	A. Latimer Wilson	Creston	Bouncer 9561	Shire
4398	A. Latimer Wilson	Creston	Royal Paxton 9743 (25592)	Shire
4473	August Reetz	Cromwell	LaRose 54387 (67502)	Percheron
4493	Geo. W. Bilbo	Creston	Creston Blair 9762	Shire
4494	D. J. Gibbons	Cromwell	Rex Brilliant 9760	Shire
4562	Geo. W. Bilbo	Creston	Marquis 52511	Percheron
4598	M. Iiams & Co.	Lorimor	Frank Rex 47280	Trotter
4757	Ruckman Bros	Afton	Prosper 17303	French Draft
4834	Gus A. Swanson	Creston	Richelieu 17103	French Draft
4847	H. H. Jeter	Thayer	Osceola Hope 10201	Shire
4111	W. E. Harpin	Creston	Lime Light 44106	Trotter
568	J. J. Thompson & Son	Afton	Bijou 10839	French Draft
2183	J. H. Garrels	Thayer	Teddy R. 44856	Percheron
4844	Shannon City Belgian Horse Co.	Shannon City	Orphelin 3244 (38144)	Belgian
2712	G. S. Shannon	Spaulding	Plain View Dignity 5550	Shire
326	Ed. Beeber	Lorimor	Bluffer 29717	Percheron
169	Geo. W. Bilbo	Creston	Sampson 7853	Shire
4996	Frank A. Ide	Creston	King Imanuel 53462	Percheron
762	C. G. Webb	Afton	Moscou 25599 (43603)	Percheron
5054	A. Latimer Wilson	Creston	Tenor 52250 (64552)	Percheron
5055	A. Latimer Wilson	Creston	Placier 52249 (63512)	Percheron
5093	Geo. W. Bilbo	Creston	Banker Boy 52500	Percheron
5150	Geo. W. Bilbo	Creston	Dick Banker 18221	French Draft
3694	Geo. W. Bilbo	Creston	King 13414	French Draft
5179	G. W. Dobbs	Creston	Nebo 18282	French Draft
5217	Geo. W. Bilbo	Creston	Prince Rupert 59798	Percheron
5218	Geo. W. Bilbo	Creston	Roy Banker 17850	French Draft
5237	Bilbo & Eggers	Creston	Shamrock 59746	Percheron
5286	Geo. W. Bilbo	Creston	Jarvis 10339	Shire
5287	Geo. W. Bilbo	Creston	Dick Vincent 10340	Shire
5336	W. R. Wilson	Arispe	Glonglou 43141 (69862)	Percheron
5378	Geo. W. Bilbo	Creston	Corbet 32278	Percheron

VAN BUREN COUNTY

457	J. V. Clark	Birmingham	Blyth Farmers Lad 5389 (16003)	Shire
458	J. V. Clark	Birmingham	Rudolf 70 (1246)	Oldenburg Coach
114	T. L. Simmons & Son	Bonaparte	Esnault 34769	Percheron
155	A. A. Bonner	Keosauqua	Jamais 25583 (43815)	Percheron
197	E. E. Keck	Stockport	Roseau 25586 (44296) 12994	French Draft and Percheron
256	Jas. W. Rhynas	Stockport	Pepin 35100 (52938)	Percheron
479	Wm. Bishop	Milton	Marquis III 33769	Percheron
792	J. W. Warner	Bentonsport	Mud Creek Bill 10274	Clydesdale
813	J. V. Clark	Birmingham	Masher 8390	Shire
823	S. B. & L. C. Carroll	Selma	Keota-Blaurock 24823	Percheron
824	J. H. Zeitler	Douds-Leando	Chequest Hero 44256	Percheron
1161	L. S. Pickett	Cantril	Cherbourg 25581 (44507)	Percheron
1160	L. S. Pickett	Cantril	Volcan 642 (4052)	Belgian
1468	W. D. Thomas	Douds-Leando	Chanteur 1918 (32820)	Belgian
1469	W. D. Thomas	Douds-Leando	Radis (48708)	Percheron
154	R. C. Harris	Stockport	Plato 44975	Percheron
1712	F. M. Smith	Stockport	Champ 11570	Clydesdale
1713	F. M. Smith	Stockport	Stockport Dewey 23673	Percheron
1790	T. R. Robertson	Farmington	Chopin 44113 (57667)	Percheron
1210	J. E. McKeehan	Farmington	Chief Coburn 6982	Shire
2111	L. K. Doud	Douds-Leando	Panama 41618	Percheron

VAN BUREN COUNTY—Continued

Cert.	Name of Owner	Postoffice	Name of Stallion	Breed
2329	P. D. Holloway	Milton	Omar C. 42163	Trotter
2395	A. J. Leffler	Stockport	Master Fearless 9484	Clydesdale
2453	R. E. Meek	Bonaparte	Mellier 9993	French Draft
2529	E. D. Prunty	Farmington	Kale 8501	Clydesdale
2530	E. D. Prunty	Farmington	Quenny 24816 (44496)	Percheron
2531	State Line Coach Horse Co.	Farmington	Tallien 2480	French Coach
2835	V. F. Newell	Birmingham	Brilliant 15192	French Draft
2836	V. F. Newell	Birmingham	Triton 15195	French Draft
2852	Birmingham Draft Horse Co	Birmingham	Favori II 45571	Percheron
2959	A. F. Haney	Milton	Fernaux 14878	French Draft
2958	A. F. Haney	Milton	Ike Squirrel 1888	Saddle Horse
3328	M. S. Bonar	Milton	Wayside Chief 8586	Clydesdale
3379	Morris, Newman & Morris	Stockport	King Dover 48394	Percheron
1108	Morris, Newman & Morris	Stockport	Collard 35004	Percheron
3438	A. M. Brady	Milton	Nectaur 45576 (64218)	Percheron
3537	S. F. Henry	Bonaparte	Victor 7448	Shire
3546	E. C. Holland, W. H. Craven & W. H. Atkins	Milton	Onatas 13267	French Draft
3560	Harrisburg Percheron Horse Co.	Stockport	Citoyen 40277 (45028)	Percheron
3574	John W. Warner	Bentonsport	Pat Crown 45203	Trotter
3609	S. C. Kerr	Keosauqua	Benson Prince 15435	French Draft
3610	S. C. Kerr	Keosauqua	Triton 15429	French Draft
3607	Fisher & Guy	Cantril	Picador 44121 (60211)	Percheron
3742	Donald & Edwards	Stockport	Prince Goodwin 8931	Clydesdale
3954	B. M. Boyer	Farmington	King Edward IV 6121	Shire
4066	W. C. Strait	Keosauqua	Lochinvar 45346	Percheron
4067	W. C. Strait	Keosauqua	Brilliantine 44255	Percheron
4262	T. L. Simmons	Bonaparte	Co Co 50603	Percheron
4515	G. K. Derby	Stockport	Brilliant 13412	French Draft
4843	Amasa Roberts	Bentonsport	Damon 40789	Percheron
5119	B. M. Boyer	Farmington	Lake City Boy 10344	Clydesdale
5313	H. C. Weller	Farmington	Saisset 14889	French Draft
5381	J. H. Keck	Stockport	Pat Compy 48727	Trotter

WAPELLO COUNTY

Cert.	Name of Owner	Postoffice	Name of Stallion	Breed
289	Jay Bros.	Blakesburg	Facteur 27139 (46785)	Percheron
288	Jay Bros.	Blakesburg	Belleau 24553 (43513)	Percheron
84	O. S. Miller	Blakesburg	Waldo 901	Belgian
604	P. E. Leinhauser	Ottumwa	Senator Ballingall 31895	Trotter
603	P. E. Leinhauser	Ottumwa	Ouse Wonder 7944	Shire
796	Jas. A. Miller	Agency	Asseurus 12860	French Draft
976	L. C. Hendershot	Ottumwa	Red Allerio 45423	Trotter
1271	J. H. Kepler	Kirkville	Transvaal 23199 (44612)	Percheron
1822	W. S. Maurice	Ottumwa	Cyprien 28736 (48448)	Percheron
2260	T. F. & W. C. Gonterman	Eldon	Uruguay (48765) 48009	Percheron
1722	W. S. Maurice	Ottumwa	John 32039	Percheron
1574	Village Creek Horse Co.	Ottumwa	Captor 12027 (12078)	Clydesdale
2816	C. E. Moore	Eddyville	Keota Standard 27698	Percheron
2947	E. M. Holmes	Eddyville	Brilliant 50218 (59668)	Percheron
3123	H. Woods	Eldon	Onslow 41973	Trotter
3382	A. J. Black	Blakesburg	Black Chief 41955	Percheron
3470	Blair and Jackson	Ottumwa	Mac Lilly 9071	Clydesdale
3493	A. D. & Carl F. Krueger	Ottumwa	King of Perche 34712	Percheron
3494	A. D. & Carl F. Krueger	Ottumwa	Pellico 24287	Percheron
3495	A. D. & Carl F. Krueger	Ottumwa	Shadeland Athelete 29695	Trotter
3496	A. D. & Carl F. Krueger	Ottumwa	Anchor Lockheart 33162	Trotter
3508	Roy Gosney	Ottumwa	Wapello Chief 13113	Clydesdale
3530	A. D. & Carl F. Krueger	Ottumwa	Xevier 29650	Trotter

WAPELLO COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3531	A. D. & Carl F. Krueger	Ottumwa	Judge Crisman 33161	Trotter
3692	Chas. Peterson, F. A. Gustafson & W. L. Johnson	Dudley	Duke of Scotland 12631	Clydesdale
4255	P. E. Leinhauser	Ottumwa	Bon Lusty 6600 (17375)	Shire
4263	Geo. Lentner	Ottumwa	Keota James 9511	Shire
4264	Geo. Lentner	Ottumwa	Keota Calix 44792	Percheron
4306	Frank Houk	Ottumwa	Mason 16162	French Draft
4165	W. F. Haywood	Eldon	Coco 16845	French Draft
271	Harry J. Rigg	Ottumwa	Teddy Lockheart 35772	Trotter
4917	Farson Horse Co.	Farson	Siflebock 56782 (62783)	Percheron
4164	H. C. Sedore	Ottumwa	Mignon 14399	French Draft
5034	Jesse Ross	Kirkville	Gigofin 56777 (71942)	Percheron
5100	E. N. Hemingway	Eldon	Nugget Jr. 57722	Percheron
5155	P. E. Leinhauser	Ottumwa	Moulton Darnley 19912 (25150)	Shire
521	P. E. Leinhauser	Ottumwa	Marengo 41408	Percheron
1414	P. E. Leinhauser	Ottumwa	Cyprien 28435 (48438)	Percheron
605	John Horen	Ottumwa	Marx 21919	Percheron
3532	J. L. Speer	Ottumwa	Captain K. 42412	Trotter
5274	W. P. Morgan	Blakesburg	Odice 37845	Trotter
5343	J. P. Hawthorne	Farson	Togo 44694	Percheron
5344	J. P. Hawthorne	Farson	Angiro 40178	Percheron
5352	Lewis Ruffing	Ottumwa	Defender's Best 11646	Clydesdale

WARREN COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
245	W. O. Romine & W. J. Shigley	New Virginia	Beaumont Standard 6080 (11758)	Shire
16	Oscar Hunt	Carlisle	Le Blanco II 12431	French Draft
22	J. A. Mason	Carlisle	Blue Rex 39786	Trotter
8	F. W. Smith	Winterset	Aeritonian 32506	Trotter
552	E. F. Keeney	Carlisle	Fuschia 25181 (43795)	Percheron
475	J. H. Simmerman	Indianola	Arthur 10059	French Draft
704	Henry Horse Co.	Carlisle	Romeo 29519 (44983)	Percheron
421	Alexander & Wheeler	Prole	Penneloz 54568	Percheron
975	St. Mary's Percheron Horse Co.	St. Marys	Ecelier 33959 (48753)	Percheron
1077	Taggart & Son	New Virginia	Illinois II 5536	Shire
1076	Taggart & Son	New Virginia	Keota-Carnot 1469	French Coach
1075	Taggart & Son	New Virginia	Waterloo 50212	Percheron
1033	Chris. Schuldt	Norwalk	Port Drapeau 1066 (21590)	Belgian
1259	J. H. Barnett & Son	Indianola	Teddy 34678	Percheron
1258	J. H. Barnett & Son	Indianola	What You Like 29161	Percheron
1291	H. B. Flesher	Liberty Center	Brilliant 10289 6427	Percheron French Draft
1290	H. B. Flesher	Liberty Center	Solide 21454 (43346)	Percheron
1289	H. B. Flesher	Liberty Center	Lenain 3966	Shire
1288	H. B. Flesher	Liberty Center	Sampson 34732	Percheron
1300	P. D. Mason	Lacona	Banker 6782	Shire
1301	Warren County Horse Co.	Indianola	Avalanch 10026	French Draft
1302	Warren County Horse Co.	Indianola	Admiral 24504 (44658)	Percheron
1459	H. E. Hopper	Indianola	Africander (Vol. 23)	Shire
1440	F. O. Nutting & Son	Indianola	Rex 41887	Percheron
1441	F. O. Nutting & Son	Indianola	Gladitor's Pride 43873	Percheron
1442	F. O. Nutting & Son	Indianola	Black Dandy 40772	Percheron
1444	F. O. Nutting & Son	Indianola	Dewey's Image 43150	Percheron
1652	J. H. Barnett & Son	Indianola	Simpson Boy 34681	Percheron
1653	J. H. Barnett & Son	Indianola	Brilliant 45630	Percheron
1443	I. W. Thomas	Norwalk	Coco 35856	Percheron
2091	T. G. McCoy	Indianola	Kenwood Chief 34680	Percheron
2147	H. E. Hopper	Indianola	Better Yet 43995	Trotter

WARREN COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2148	H. E. Hopper	Indianola	Perfectum 44143	Trotter
2501	W. T. Sinnard	Carlisle	Keota-Burnett 33461	Percheron
2611	E. T. Keeney	Carlisle	Black Joe 35854	Percheron
2532	Taggart & Son	New Virginia	Joe Bailey II 8393	Shire
2533	Taggart & Son	New Virginia	Kruger 26314	Percheron
2563	P. H. Hester	Indianola	Robert Terton 37182	Trotter
1662	Churchville Horse Co.	Churchville	Mirliton 2258 (Vol. 12)	Belgian
1794	Cumming Horse Co.	Cumming	Androcles 41274 (59473)	Percheron
2832	Social Plains Horse Co.	Indianola	Grincheur 31746	Percheron
2834	W. I. Shetterly	St. Charles	Napoleon 15565	French Draft
3172	L. C. Barnett & Co.	Indianola	General 43077	Percheron
3173	L. C. Barnett & Co.	Indianola	Admiral Jr. 48129	Percheron
3174	L. C. Barnett & Co.	Indianola	Lad 48130	Percheron
3175	L. C. Barnett & Co.	Indianola	French Lad 15717	French Draft
3279	Read Bros.	New Virginia	Stuntney Benedict 8893 (23741)	Shire
3318	J. P. Wilson	Indianola	Caesar 45583	Percheron
3345	A. E. Vansyoc	Milo	Bulger 10033	French Draft
3408	J. A. Mason	Carlisle	Duroc Rex 45351	Trotter
3471	A. DeMoss	Spring Hill	Romeo de Bernissem 2053 (27218)	Belgian
3619	James Mulvihill	Cumming	Vaneau 31435 (46653)	Percheron
3620	James Mulvihill	Cumming	Malicieux 30592 (48759)	Percheron
3627	J. F. Wright	Milo	Diamond Dick 3598	Shetland Pony
2502	Elmer Keeney	Lacona	Barondon Blaze 6450 (15973)	Shire
699	W. J. Wilson	Lacona	Questeur 10149	French Draft
3641	E. D. Spencer	Milo	Milo Boy 45455	Trotter
3669	Marshall & Hanby	Summerset	Agendcol 16101	French Draft
3260	S. W. Weeks	Indianola	Damocles 28436 (44960)	Percheron
3750	Don L. Berry	Indianola	Josef 46800	Percheron
3900	H. B. Flesher	Liberty Center	Cedar Clay 45434	Percheron
3966	Adam Stamm	Carlisle	Bonpays 50800 (64190)	Percheron
3295	F. L. Kessler	Lacona	Otto 46096	Percheron
4098	W. J. Wilson	Liberty Center	Waxham Lad 7150 (19227)	Shire
4104	L. L. Harvey	Lacona	Norwood Echo 49329	Percheron
4147	J. F. Gibbs	Lacona	Joe 49333	Percheron
4135	W. J. Wilson	Liberty Center	Igniter 5191	Shetland Pony
3696	S. W. Weeks	Indianola	The Arch Duke 2569 (8396)	Shire
4321	Ora Conrad	New Virginia	Chief 13617	French Draft
4326	F. H. Slack	Hartford	Dexter 15650	French Draft
3656	Ned E. Spurgeon	Ackworth	Groom 7342-11981 (22315)	Percheron and French Draft
4148	J. E. Riggs	Lacona	Proud Brilliant 49334	Percheron
2985	S. W. Weeks	Indianola	Brisefer 28432 (45431)	Percheron
4498	Taggart & Son	New Virginia	Hempfield Hope II 8775	Shire
4539	E. L. Flesher	Liberty Center	Gene Riley 47573	Trotter
4556	W. W. Barger	Lacona	Black Joe 52212	Percheron
4590	L. C. Noe	Hartford	Rex D. 36129	Trotter
4595	U. I. Sinnard	Carilsle	Prince Igo 54921	Percheron
4594	W. T. & U. I. Sinnard	Carlisle	Sir Phill 46671	Percheron
4789	H. B. Flesher	Liberty Center	Hempfield Sampson Jr. 10136	Shire
5078	F. O. Nutting & Son	Indianola	Gladiator II 32148	Percheron
4870	Geo. A. Metz	Lacona	Oreb 10043 (25846)	Shire
1685	Aza Hutt	New Virginia	Duke 5002	Shire
4881	Aza Hutt	New Virginia	Pompi 10040	French Draft
4892	Harry E. Hopper	Indianola	Allerton 5128	Trotter
4893	Harry E. Hopper	Indianola	Expedition 14990	Trotter
4894	Harry E. Hopper	Indianola	Willola 48767	Trotter
4895	Harry E. Hopper	Indianola	Exaller 47113	Trotter
4897	John L. Powers	Indianola	Seal Brown 43996	Trotter
5078	F. C. Nutting & Son	Indianola	Demon II 15410	French Draft
1190	A. C. Smith	Carlisle	Joe Doe 7790	Clydesdale

WASHINGTON COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
198	M. M. Kempf	Kalona	Norm 13155	French Draft
222	W. R. Bonham	Kalona	Why Not II 7186 (21027)	Shire
1059	J. E. Elgar	Noble	Little Plumb 40087	Trotter
1058	J. E. Elgar	Noble	Big Cinnamon 39090	Trotter
1111	W. C. White	Ainsworth	Mithridate 20535 (35918)	Percheron
1113	W. C. White	Ainsworth	Albert Sidney Johnston 42345	Percheron
1159	Chapel Bros.	Ainsworth	Kadour 24767 (46672)	Percheron
1158	Chapel Bros.	Ainsworth	Frenchman 499	French Draft
1157	Chapel Bros.	Ainsworth	General Washington 1475	Saddle Horse
1327	A. P. Hayes	Washington	Ganzoo 17645	Trotter
1495	C. C. Erude	Wellman	Keota Arthur 5796	Shire
1806	The Egypt Horse Co.	Washington	Parfait 40031 (42295)	Percheron
1993	B. J. Shetler	Kalona	Kalona Boy 38259	Trotter
2006	C. E. Hershberger	Wellman	Young Rapin 14543	French Draft
2035	Leichty & Conrad	Noble	Guerrero 46188 (60811)	Percheron
2036	Leichty & Conrad	Noble	Prince John II 6137 (19032)	Shire
2092	R. H. Leeper	Noble	Eugene 41566	Percheron
2093	R. H. Leeper	Noble	Strubby Fear None 7573 (20935)	Shire
2094	R. H. Leeper	Noble	Congolias 1921 (29634)	Belgian
2210	J. B. Spencer	Ainsworth	Satisfait 46048 (63380)	Percheron
2417	C. J. Winter	Washington	Ardent 46151 (58821)	Percheron
2512	T. E. Johnson	Washington	Lavron 28466	Trotter
2525	B. J. Oyer	Noble	Prince Monarch 40629	Percheron
2632	D. Rittenhouse & Son	Washington	Marcellus 46075	Percheron
2656	E. E. Norman	Wellman	Roy N. 43477	Trotter
2590	E. E. Embe & Chas. Gabriel	Wellman	Keota-Jacob 7789	Shire
2591	E. E. Embe & Chas. Gabriel	Wellman	Keota-Sargent 8270	Shire
2728	C. J. Winter	Washington	Lake Lancer 8785 (20622)	Shire
2737	J. C. Swift	Washington	Dandy Dan 21508	Trotter
2874	V. F. Schnoebelen	Riverside	Keota-Pansey 4972	Shire
2917	Wentworth & McClelland	Brighton	All Here 9248	French Draft
1918	Wentworth & McClelland	Brighton	Waldo 13323	French Draft
2919	Wentworth & McClelland	Brighton	Gabels' Champion 6132 (18028)	Shire
2920	Wentworth & McClelland	Brighton	Rodomont 22624 (34006)	Percheron
3119	E. D. Herchberger	Kalona	King 14456	French Draft
3418	D. J. & D. M. Palmer	Washington	Truant's Premier 21530	Percheron
3745	D. Rittenhouse	Washington	Prince of Lakewood 21528	Percheron
1112	C. S. Fletcher	Crawfordsville	Black Prince 4207	Shire
1110	Henry Lefler	Ainsworth	Conrad 33890	Trotter
4030	W. C. White	Ainsworth	Hercules 15972	French Draft
4151	J. W. Glancy	Crawfordsville	Glaneur 22711 (43051)	Percheron
4391	Turbott & Morrison	Ainsworth	Ainsworth Lad 47898	Trotter
4392	Turbott & Morrison	Ainsworth	Keota Albert 49054	Percheron
1830	J. A. Marshall	Noble	Manliness 25546	Percheron
838	J. A. Marshall	Noble	Wenona Marmion 4768	Shire
2584	Ben J. Shelter	Kalona	Cyrano 50487 (45628)	Percheron
4915	Jos. B. Hochstetler	Kalona	Keota Picador 19481	Percheron
5009	G. W. Parker	Washington	Royal Lincoln III 9257 (24831)	Shire
3580	C. C. Dawson	Washington	Ed Aegon 45139	Trotter
4776	Leeper Bros.	Noble	Wayland Colonel 9457	Shire

WAYNE COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
441	A. F. Place	Humeston	Mambrino Kirkwood 30703	Trotter
500	T. A. Toliver	Clio	Ralph 6323	Shire
442	A. F. Place	Humeston	Columbus 11096	French Draft
443	A. F. Place	Humeston	Spark IV 7147 (19136)	Shire
444	A. F. Place	Humeston	Romulus 8851	French Draft
507	Clay Richman Horse Co.	Humeston	Rosier 28350 (48816)	Percheron
506	Clay - Richman Horse Co.	Humeston	Markeaton Primate 6774 (19825)	Shire
689	D. L. McMurray	Corydon	Bismark 10374	French Draft
423	A. H. Palmer	Humeston	Captain Pat 40845	Trotter
753	O. O. Littell	Corydon	Gentleman Joe II 6453	Shire
755	O. O. Littell & Co.	Corydon	Judge Halsey 33638	Trotter
754	O. O. Littell & Co.	Corydon	Guydirwood 28590	Trotter
748	J. F. Hickman	Humeston	Metropolitan 31753 (47585)	Percheron
788	T. A. C. Miller	Seymour	Harlequin 24591	Percheron
903	Clio Shire Horse Co.	Clio	Manea George 6888	Shire
961	Walnut Township Horse Co.	Seymour	Dunios 34507 (48527)	Percheron
1123	C. H. Trembly	Lineville	Kingsland Victor 7773 (20615)	Shire
1141	Thos. Allison	Sewal	Carroll 19192	Percheron
1230	C. R. Noble & L. W. Donald	Promise City	Donzelo 500	Belgian
1607	C. M. Fordyce	Powersville, Mo.	Creston Jerry 10097	French Draft
1716	Couchman & McNee	Sewal	Stuntney Hereward 6618 (Vol. 24)	Shire
1813	Confidence Shire Horse Co.	Promise City	Sentinel II 6883 (17312)	Shire
2295	Thos. Donald	Corydon	King of Perchie 18793	Percheron
2296	W. D. Wiley	Lineville	Lad 8364	Shire
2297	W. D. Wiley	Lineville	Roxey 8365	Shire
2412	W. D. Wiley	Lineville	Regular 7716	Shire
2637	A. H. Palmer	Humeston	Labourer de Horrues 2530 (34726)	Belgian
2538	Genoa Draft Horse Co.	Seymour	Barbancon 29924 (48667)	Percheron
2735	W. P. & T. H. Brown	Promise City	Stuntney Duke (Vol. 25)	Shire
2736	W. P. & T. H. Brown	Promise City	Tona 1470 (25380)	Belgian
2769	Tom Donald	Corydon	Walter 46030 (53154)	Percheron
1234	Otto Thomas	Seymour	Acadia 20265	Percheron
2891	C. T. Harper	Corydon	Creston Tom 4449	Shire
2914	T. H. & W. P. Brown	Promise City	Renzo (Vol. 21)	Hackney
621	R. E. Richie & J. C. Snodgrass	Allerton	Gambetta 40142 (52972)	Percheron
3514	O. O. Littell	Corydon	Lightman 31396	Trotter
3515	O. O. Littell	Corydon	La Mark 11061	French Draft
4090	C. L. Murrow	Promise City	John the Baptist 5161	Morgan
4360	W. H. Thomas	Sewal	Robuste 54550 (63610)	Percheron
4393	R. W. Richie	Allerton	Colonel Colbert 39077	Trotter
4412	C. E. Pettit	Seymour	Bristol 52007 (67268)	Percheron
4440	Henry B. Scholty	Allerton	Xavier 14561	French Draft
4505	A. F. Place	Humeston	Prince Albert 54069	Percheron
3841	A. F. Place	Humeston	Carnot de Vlad 2003 (41916)	Belgian
4913	M. D. Kelso	Sewal	Fauveau 14562	French Draft
4918	W. H. Thomas	Sewal	Gerico 56783 (72250)	Percheron
4922	O. O. Little	Corydon	Almeron D. 48921	Trotter
4923	O. O. Little	Corydon	Alliemo 48922	Trotter

WEBSTER COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
960	Callender Horse Improving Co.	Callender	Attila 26064 (46766)	Percheron
1578	Frank Schill	Harcourt	Bijou de Lant (24954)	Belgian
1188	Knut Trondsen	Callender	Ismael Du Fosteau 1188	Belgian
1457	Roelyn Horse Co.	Mooreland	Page 40380 (54733)	Percheron
1531	P. H. Halligan	Mooreland	Newton Major 5559	Shire
1751	P. R. Peterson	Fort Dodge	Dreadnaught 8394	Shire
2703	Richard Cooper	Lehigh	Durantin 22699 (42408)	Percheron
2834	West Ft. Dodge Horse Co.	Fort Dodge	Black Dan 43111	Percheron
3025	Elkhorn Horse Co.	Kalo	Taupin 40711 (56545)	Percheron
322	Jno. McMohn & T. M. Butler	Barnum	Indianola Lad 34682	Percheron
3313	Chas. Anderson	Fort Dodge	General Macee 22379	Percheron
3404	Otho Horse Co.	Fort Dodge	Keiser 15888	French Draft
917	W. L. Ainsworth	Fort Dodge	Tarouche de Melin 2650 (33050)	Belgian
3399	Knut Thorndson	Callender	Til de Ter 2569	Belgian
3603	J. I. Rutledge	Fort Dodge	Duke 11928	Clydesdale
3605	John McMahon	Clare	Straight Wood Jr. 35334	Trotter
3659	M. H. Andrews	Dayton	Printemps 24262 (43992)	Percheron
3808	Wm. Haurahan	Duncombe	Kongo King 9018	Shire
3925	J. C. Savage	Fort Dodge	Edenson 11931	Clydesdale
3926	John J. Tierney	Fort Dodge	Arcole 2851 (41884)	Belgian
3728	Clare Belgian Draft Horse Co.	Clare	Monarque de Taviers 2599 (29770)	Belgian
4082	John Crowley	Vincent	Perfection 16654	French Draft
2268	H. F. Hoyer & A. W. Hasselbring	Barnum	Black Monarch 42249	Percheron
4134	John Greall	Duncombe	Gueridon 54384 (67632)	Percheron
2339	C. O. Humbert	Fort Dodge	Coco de Falaon 1552	Belgian
1236	L. Ridgeway	Dayton	Monaboul Brownell 35308	Trotter
4827	James F. Brady	Fort Dodge	Doc 16655	French Draft
4828	James F. Brady	Fort Dodge	Duke 17483	French Draft
4829	James F. Brady	Fort Dodge	King 17486	French Draft
1067	John 'F. Cavanaugh	Clare	General Sherman 27897	Percheron
1109	C. L. Waldron	Callender	Colonel 14222	French Draft
3347	J. M. Ulrich	Clare	Keota Champion 20226	Percheron
4886	Duncombe Horse Co.	Duncombe	Aiglon 12944 (6105)	French Draft
1503	Lincoln Kilgore	Gowrie	Fred Douglas 17468	French Draft
5262	M. J. Riel	Barnum	Chairman II 10365 (24129)	Shire

WINNEBAGO COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
123	Jno. Batchelor	Thompson	Nicodeme 31288 (46297)	Percheron
139	Johnston Bros.	Buffalo Center	Forfait III 26479	Percheron
140	Johnston Bros.	Buffalo Center	Red Payne 37596	Trotter
331	Joice Horse Co.	Lake Mills	Bardon 46504	Percheron
472	Sorn Olsen & Moe Bros.	Stacyville	Starr Brilliant 22480	Percheron
1251	C. E. Holcomb	Buffalo Center	Velo 31524 (47571)	Percheron
1250	C. E. Holcomb	Buffalo Center	Brilliant 27213	Percheron
2115	C. E. Holcomb	Buffalo Center	Victor 46937	Percheron
2116	C. E. Holcomb	Buffalo Center	Vigo 46936	Percheron
2513	R. B. Young	Buffalo Center	Superbe 42820 (60762)	Percheron
3215	Skiles Core	Forest City	Major Bernard 18561	Percheron
3216	Core Bros.	Forest City	Bernard II 42096	Percheron
3195	Johnston Bros.	Buffalo Center	Eglantier 41660 (48876)	Percheron
3196	Johnston Bros.	Buffalo Center	Archiduc 2522 (Vol. 13, p. 543)	Belgian
3608	W. E. Butcher	Forest City	W. E. Butcher 11114	Trotter
3622	O. A. Olson	Forest City	Zeno 35185	Percheron
4032	P. H. Harrington	Buffalo Center	Pool Jim 46473	Trotter
4167	B. L. Kerby	Lake Mills	Jest B. 38909	Trotter
4166	Lake Mills Percheron Horse Co.	Lake Mills	Annibal (624)	French Draft
4163	Johnston Bros.	Buffalo Center	Phileeon 21274 (43155)	Percheron
2982	P. H. Harrington	Buffalo Center	Cartouche 42317	Percheron
4416	J. B. Keeler	Lake Mills	Peru 2785	French Coach

WINNESHIEK COUNTY

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
428	I. N. Reed	Burr Oak	Alger 35212 (52492)	Percheron
172	Bloomfield Belgian Draft Horse Co.	Castalia	Noe (25532)	Belgian
117	M. E. Marsh	Burr Oak	Mark Hanna 1070	Belgian
111	Percheron Horse Co.	Locust	Frondeur 29894 (46118)	Percheron
144	Franklin Draft Horse Co.	Decorah	Maretiaux 1380 (25292)	Belgian
255	Jacob Headington	Decorah	Major Pilot 7171	Shire
229	B. O. Bahken	Decorah	Galopin (54336)	Percheron
334	Belgian Draft Horse Co.	Decorah	Maurisse (25500)	Belgian
41	E. J. Curtin & G. F. Baker	Decorah	Claude Melnotte 33982	Trotter
71	Ossian Percheron Horse Co.	Ossian	Galant 24776 (43050)	Percheron
75	Ed Lynnes	Decorah	Jaquot (56946)	Percheron
481	Washington Prairie Breeders' Ass'n	Decorah	Athos 14347	French Draft
612	Decorah Coach Horse Co.	Decorah	Pirat 2599	German Coach
759	Hesper Draft Horse Co.	Hesper, Minn.	Baladin 42024 (54427)	Percheron
2212	Adolph Running	Decorah	Henri 30170	Percheron
2316	Alex Sheggrud	Decorah	The Coupon 35474	Trotter
2949	Henry Steffes	Fort Atkinson	British Flag II 4350	Shire
2965	Burr Oak Belgian Draft Horse Co.	Burr Oak	Camin De Ligne 2375 (29356)	Belgian
3219	Thos. Floody	Ossian	Paros 15184 (27271)	Percheron
3409	Thos Floody	Ossian	Allcolyte 45452	Trotter
593	L. J. Anderson	Decorah	Prince Henry 6728	Shire
701	E. J. Curtin	Decorah	Superior 26492	Percheron
3917	W. B. Sphar	Castalia	Fickle Prince 11689	Clydesdale
4063	Bluffton Horse Co	Ridgeway	Pompon 40058 (42735)	Percheron
4368	W. H. Bachelder	Castalia	Chester 9191 (10526)	Clydesdale
96	Anderson Bros. (keepers)	Decorah	Sturmidor 29696	Percheron
3851	August Lansing	Ossian	Prince 11083	Clydesdale
1980	G. C. Huber & Frank Ludwig	Ft. Atkinson	Kleber 29581 (44593)	Percheron
4929	Highlandville Percheron Horse Co	Locust	Marengo 12316 (519)	French Draft
1437	Brandt Bros	Ossian	Englisch 45324 (44673)	Percheron
3662	August Lansing	Ossian	Trojan 49404	Percheron
3357	Thos. Floody	Ossian	Royal King 9770 (10276)	Clydesdale

WOODBURY COUNTY

257	D. M. Hamilton	Moville	Echo Chief 2d 5209	Shire
550	J. A. Clark	Hornick	Lord King 24529	Percheron
723	J. J. Buchan	Pierson	Sultan 10823	French Draft
957	The Lawton-Bronson Percheron Horse Co.	Bronson	Vandeix 34437 (46494)	Percheron
1118	A. B. Robinson	Sloan	Guy Caton 29643	Trotter
1244	Jas. Crabb	Bronson	Bruce MacGregor 8553	Clydesdale
1255	J. Onstot & J. Marquart	Lawton	Gazon 42873 (59782)	Percheron
1027	Lum Hollow Horse Co.	Smithland	Bayard 31302 (46064)	Percheron
1383	Fred Dyson	Sloan	King 12208	French Draft
1403	W. C. Coon	Anthon	Sampson 9687	French Draft
1509	Joseph Bernard	Anthon	March 12487	French Draft
1535	G. E. Loring	Sioux City	Woodfern 33140	Trotter
2276	August Peterson	Danbury	Cacolet 46152 (55547)	Percheron
2281	J. E. Putnam	Smithland	Domero 33430	Trotter
2526	Moville Percheron Horse Co.	Moville	Dominant (46091)	Percheron
2455	H. W. Goreham	Moville	King II 44627	Percheron
2711	Danbury Horse Co.	Danbury	Pollux de Caviers (30032)	Belgian

WOODBURY COUNTY—Continued

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2845	Adam Trieber	Danbury	Odebolt Choice 11758	Clydesdale
2870	R. M. Foster	Correctionville	Wildair 23037	Percheron
2892	J. F. Brooks	Pierson	Oreste 21778 (43514)	Percheron
2967	A. A. Sadler	Correctionville	Bumper 45224	Percheron
2983	O. S. Pixler & G. W. Whitmer	Pierson	Financier 6135	Shire
3054	Ira Kelsey	Hornick	Rodrigo 40916	Percheron
3154	S. L. Spencer	Sloan	Our Baron 33108	Trotter
4206	Rudolph Utesch	Correctionville	Leger (16648)	Belgian
4415	F. C. Woodford	Glenellen	Lockly 45153	Trotter
254	Hanse Peterson	Danbury	Carlos (47475)	Percheron
4549	J. A. Reed	Sioux City	Beaumont 47637	Percheron
4718	A. B. Robinson	Sloan	Sheriff Strain 40702	Trotter
129	Fritz Florke	Pierson	Andree 1159	German Coach
2224	George Pierce	Sioux City	Mystico 14653	French Draft
4850	John Wink	Moville	Carlos de Bertin 3229 (38412)	Belgian
1596	A. A. Sadler	Correctionville	Mark Hanna 12489	French Draft
4991	E. R. Whyte	Cushing	Jupiter 51453 (58231)	Percheron
5346	Ben Peterson	Danbury	Grotin 51593 (70991)	Percheron
5398	John T. Pope	Sloan	Bold Corbett 6847	Shire

WORTH COUNTY

248	Ramsey & Kingland	Joice	Trader 18996	Percheron
420	J. I. Hove	Northwood	Prince 31725	Percheron
2808	Ben Moore	Manly	Vallent 30183	Percheron
2875	M. J. Tracy	Manly	Dewey 23968	Percheron
2897	Danville Percheron Horse Co.	Kensett	Chaumont (52914)	Percheron
3321	Hartland Silver Lake Horse Co.	Northwood	Reliance 34086	Percheron
3503	H. Larson	Hanlontown	Culture 12778	Percheron
3624	Fertile Horse Co.	Fertile	Belnie Royal Harold 6781 (18512)	Shire
3625	Jorgen J. Brasdal	Joice	Black Duke 32045	Percheron
4021	Anton Nelson	Meltonville	Rambler 21004	Percheron
3959	D. A. Mitchell	Manly	Gladstone 12220	Clydesdale
4081	Ole G. Mellem	Northwood	Boneville 49511	Percheron
4209	C. H. Dancliff	Manly	Rex Wallace 50520	Percheron
3868	J. A. & A. M. Hanson	Northwood	Joker 3121 (51964)	Belgian
474	G. A. Hill	Meltonville	Selim 32699	Percheron
2253	H. E. Wiley	Northwood	Ardent 27452 (44168)	Percheron
4724	H. E. Wiley	Northwood	Jupiter de Door 3585 (Vol. 15)	Belgian
5342	T. W. Youmans	Northwood	Chief 4719	Morgan
5380	G. N. Haugen	Northwood	Isaac 43025	Percheron

WRIGHT COUNTY

815	Henry Mauss	Belmond	Corbon 34819	Percheron
902	Oliver Fryslie	Dows	Orient 27808 (47028)	Percheron
1292	G. W. Finn	Dows	Volunteer Clippings 41142	Trotter
1394	G. H. Jameson	Dows	De Arve 40182	Percheron
1395	G. H. Jameson	Dows	Kruger De Corthys 2228 (24678)	Belgian
1500	W. H. Mantle	Goldfield	Keota Decide 20211	Percheron
1755	E. G. Gould	Eagle Grove	Eden G. 42250	Trotter
2528	Polhemus Bros.	Belmond	Bonhomme 14113 (474)B	French Draft
2549	F. Luick & Son	Belmond	Virly 13530 (48482)P 42334	French Draft Percheron
2550	F. Luick & Son	Belmond	DuPiton 17063 (33658)	Percheron
2705	Dows Shire Horse Co.	Dows	Exton Vulcan 6997 (Vol. 25)	Shire
1926	J. C. Gingerich	Eagle Grove	Obstine 50544 (62536)	Percheron
2818	J. H. Callahan	Goldfield	Keota Garfield 4970	Shire
2856	E. Vest	Goldfield	Maraudeur 44468 (55601)	Percheron
3521	D. D. Wood	Goldfield	Riflard 28393 (47064)	Percheron

WRIGHT COUNTY—CONTINUED

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3652	Eagle Grove Percheron Horse Co.	Eagle Grove	Castellane 14662 (45082) 28151	Percheron & French Draft
3738	Hickory Grove Horse Co.	Belmond	Lambin 51241 (60152)	Percheron
4028	German Horse Co	Belmond	Gold Lad (Vol. 24)	Clydesdale
3378	W. A. Evans	Eagle Grove	Ward 5819 (18431)	Shire
3265	E. Luick	Belmond	Boulon 14862 (62679)	French Draft
3254	Cornelia Horse Co	Clarion	Pascal (25498)	Belgian
4395	F. H. Brooks	Belmond	Marabout 10911 (3382)	French Draft
4582	A. J. Lamm	Clarion	Donald 46802	Percheron
1870	Wm. Gallagher & A. J. Finn	Belmond	Mark Time (23487)	Shire
5096	C. L. Webb & Pink Trees	Belmond	Pantin 32315 (58307)	Percheron
3615	B. M. Holverson	Clarion	Warrulton 13107	French Draft
4860	Howard Anderson	Clarion	Celum 54573	Percheron
5337	J. W. Lindsay	Clarion	Laselle 53057	Percheron

HORSES OWNED OUTSIDE OF STATE NEAR STATE LINE

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
4203	Emmons Draft Horse Co.	Emmons, Minn.	Kruger 35231 (53175)	Percheron
3623	J. V. Gillard	Glenville, Minn.	Togo 42585	Percheron
4366	E. S. Tead & Sons	Canton, Minn.	Prince Favorite 40164	Percheron
3517	Sam Domrud	Canton, Minn.	Gables Pride 7125 (21450)	Shire
4441	John Michel	Harmony, Minn	Anodin 35213 (53366)	Percheron
4470	A. G. Anderson	Worthington, Minn.	Phoenix 45531	Percheron
4096	Andrew G. Anderson	Worthington, Minn.	Quentin 44080	Percheron
1792	J. L. Thomson	Guilford, Mo.	Major II 9080	Shire
5178	Emmons New Percheron Draft Horse Co.	Emmons, Minn.	Espoir 42751 (63711)	Percheron
5219	M. G. Safely	Hopkins, Mo.	Elixie Bogaerden 2153 (30816)	Belgian
5270	J. H. Duxbury & Bro.	Preston, Minn.	Star 12276	Clydesdale
4509	A. S. Cleveland	Hills, Minn.	Sebastion II 4707	German Coach

PART XV

LAWS

Relating to the duties of the department of Agriculture; law defining what shall constitute a lawful fence; law requiring state enrollment of stallions kept for public service; law giving owner or keeper of a stallion a lien upon his get for service fee, and weed law

Section **1657-a. Repeal.** That section sixteen hundred and fifty-three (1653), sixteen hundred and fifty-four (1654), sixteen hundred and fifty-five (1655), sixteen hundred and fifty-six (1656), sixteen hundred and fifty-seven (1657), sixteen hundred and seventy-four (1674), sixteen hundred and eighty-two (1682) and sixteen hundred and eighty-three (1683) of the code, and chapter forty-two (42) of the acts of the Twenty-seventh General Assembly, be and the same are hereby repealed. [28 G. A., ch. 58, § 18.]

Sec. **1657-b. Department of agriculture.** For the promotion of agriculture, horticulture, forestry, animal industry, manufactures, and the domestic arts, there is hereby established a department to be known as the "department of agriculture," which shall embrace the district and county agricultural societies organized or to be organized under existing statutes and entitled to receive aid from the state, the state weather and crop service, and the offices of the dairy commissioners and state veterinarian. [28 G. A., ch. 58, § 1.]

Sec. **1657-c. State board of agriculture.** The department shall be managed by a board, to be styled "the state board of agriculture," of which the governor of the state, the president of the state college of agriculture and mechanic arts, the state dairy commissioner, and the state veterinarian shall be members *ex officio*. The other members of the board shall consist of a president, vice-president, secretary, treasurer and one director from each congressional district, to be chosen as hereinafter provided. [28 G. A., ch. 58, § 2.]

Sec. **1657-d. Agricultural convention.** There shall be held at the capitol on the second Wednesday of December, 1900, and annually thereafter, a state agricultural convention, composed of the state board of agriculture, together with the president or secretary of each county or district society entitled to receive aid from the state, or a regularly elected delegate therefrom accredited in writing, who shall be a resident of the county; and in counties where there are no agricultural societies the board of supervisors may appoint a delegate who shall be a resident of the county. The president or an accredited representative of the following named associations shall be entitled to membership in the said convention, to-wit: the state horticultural society, the state dairy association, the improved stock breeders' association, the swine breeders' association, and each farmers' institute organized under the provisions of section sixteen hundred and seventy-five (1675) of the code. Provided, said farmers' institute has been organized at least one (1) year, and has reported to the state secretary of agriculture, not later than November 1st through its president and secretary or executive committee, that an institute was held according to law, the date thereof, the names and postoffice address of its officers. They shall also furnish the state secretary of agriculture with a copy of program of each institute hereafter held and one or more papers read before such institute, if papers are read. On all questions arising for determination by the convention including the election of members of the board, each member present shall be entitled to but one vote, and no proxies shall be recognized by the convention. [28 G. A., ch. 58, § 3.] [29 G. A., ch. 165, § 1.] [31 G. A., ch. 66.]

Sec. **1657-e. Officers—directors—vacancies.** At the convention held on the second Wednesday in December, 1900, there shall be elected a president and vice-president for the term of one year; also one director of the board of agriculture from each congressional district; those from even-numbered districts to serve two years and those from odd-numbered districts one year. At subsequent annual conventions, vacancies in the list of district directors shall be filled for two years. But vacancies occurring from death or other causes, shall be filled for the unexpired term; and the board may fill any vacancy in office until the next annual convention. [28 G. A., ch. 58, § 4.]

Sec. **1657-f. State farmers' institute.** In connection with the annual convention, either preceding or following the day on which the officers are elected, the board may hold a state farmers' institute, for the discussion of practical and scientific topics relating to the various branches of agriculture, the substance of which shall be published in the annual report of the board. [28 G. A., ch. 58, § 5.]

Sec. **657-g.. Duties of board.** The board shall have general supervision of the several branches, bureaus and offices embraced in the department of agriculture; and it shall be the duty of the board to look after and promote the interests of agriculture, of agricultural education and animal and other industries throughout the state; to investigate all subjects relating to the improvement of methods, appliances and machinery, and the diversification of crops and products; also to investigate reports of the prevalence of contagious diseases among domestic animals, or destructive insects and fungus diseases in grains, and grasses, and other plants, the adulteration of foods, seeds and other products, and to report the result of investigation, together with recommendations of remedial measures for prevention of damage resulting therefrom. It shall be the duty of the Iowa agricultural experiment station to co-operate with the department of agriculture in carrying on these investigations. [28 G. A., ch. 58, § 6.]

Sec. **1657-h. Executive commitee.** The president, vice-president, and secretary shall constitute an executive committee, which shall transact such business as may be delegated to it by the board of agriculture. The president may call meetings of the board when the interests of the department require it. [28 G. A., ch. 58, § 7.]

Sec. **1657-i. State fair.** The board shall have full control of the state fair grounds and improvements thereon belonging to the state, with requisite powers to hold annual fairs and exhibits of the productive resources and industries of the state. They may prescribe all necessary rules and regulations thereon. The board may delegate the management of the state fair to the executive committee and two or more additional members of the board; and for special work pertaining to the fair they may employ an assistant secretary and such clerical assistance as may be deemed necessary. All expenditures connected with the fair including the per diem and expenses of the manager thereof, shall be recorded separately and paid from the state fair receipts. The said board of agriculture shall have the power to authorize or forbid the construction of street railways within the state fair grounds and may define the motive power by which the cars thereon shall be propelled and to authorize or forbid the location and laying down of tracks for street railways in said grounds. [28 G. A., ch. 58, § 8.] [29 G. A., ch. 166, § 1.]

Sec. **1657-j. Duties of officers as to bequests.** The department of agriculture is hereby authorized to take and hold property, real and personal, derived by gifts and bequests, and the president, secretary and treasurer shall have charge and control of the same, subject to the action of the board, and shall give bonds as required in case of executors, to be approved by the board of agriculture and filed with the secretary of state. [28 G. A., ch. 58, § 9.]

Sec. **1657-k. Secretary—duties—Iowa Year Book of Agriculture.** The board shall elect a secretary for a term of one year, whose duties shall be such as usually pertain to the office of a secretary, under the direction of the board. He shall keep a complete record of the proceedings of the annual state agricultural convention and all meetings of the board; he shall draw all warrants on the treasurer and keep a correct account thereof; he shall compile and superintend the printing of the annual report of the state department of agriculture, which shall be entitled "The Iowa Year Book of Agriculture," and shall include the annual report of the dairy commissioner, the state dairy association, and the Iowa agricultural experiment station, the annual report of the state veterinarian, the Iowa weather and crop service, the Iowa improved stock breeders' association, or such part thereof as the executive committee may approve, and such other reports and statistics as the board may direct, which shall be published by the state; he shall perform such other duties as the board may direct. [29 G. A., ch. 58, § 10.]

Sec. **1657-l. Distribution of Year Book—competitive bids.** The Iowa Year Book of Agriculture shall be printed and bound in cloth and such number as the executive council shall direct, to be distributed as follows: One copy to each state officer and member of the general assembly; ten copies to the state library and ten copies to the libraries of the state university and the state college of agriculture and mechanic arts; one copy to each library in the state open to the general public; one copy to the president and secretary of each county and district agricultural society, and one copy to the board of supervisors of each county in which there is no such agricultural society, and the balance as may be directed by the board of agriculture. The executive council shall receive competitive bids for the printing and binding of the year book and let the contract to the lowest responsible bidder. Such bidding, however, shall be confined to concerns in Iowa and to persons or corporations paying the union scale of wages. [28 G. A., ch. 58, § 11.].

Sec. **1657-m. Present officers and directors.** The present officers and directors of the state agricultural society, upon taking effect of this act, shall be, and they are hereby made and constituted officers and directors of the department of agriculture, who, with the *ex officio* members named in section two (2) hereof, shall have full control and management of the department of agriculture until the members of the state board of agriculture are elected as provided in section three (3) of this act. [28 G. A., ch. 58, § 12.]

Sec. **1657-n. Office—supplies—salary of secretary and assistant.** The office of the department of agriculture shall be in rooms numbers eleven (11) and twelve (12), in the capitol building; the said office shall be entitled to such supplies, sationery, postage and express as may be required, which shall be furnished by the executive council in the same manner as other officers are supplied. The salary of the secretary shall not exceed eighteen hundred dollars ($1,500) per annum; and when the board deem it necessary it may employ an assistant at an expense of not more than seventy-five dollars ($75) per month. [28 G. A., ch. 58, § 13] [31 G. A., ch. 67.]

[The amendment by the 31 G. A., was by striking out the word "fifteen" in line 6 and inserting in lieu thereof the word "eighteen," but the figures "($1,500)" were unchanged.]

Sec. **1657-o. Treasurer—duties—bond—compensation.** The board shall elect a treasurer for a term of one year, whose duties shall be to keep a correct account of the receipts and disbursements of all moneys belonging to the department of agriculture, and shall make payments only on warrants signed by the president and secretary thereof, except in payment of premiums. He shall execute a bond for the faithful performance of his duty, to be approved by the board and filed with the secretary, and shall receive such compensation for his services as shall be fixed by the board, not exceeding one hundred dollars per annum. [28 G. A., ch. 58, § 14.]

Sec. **1657-p. Compensation of elective members.** The elective members of the state board of agriculture, for attending the meetings of the board, and for the special work pertaining to the holding of the state fair shall be allowed four dollars ($4) per day and five cents per mile in going and returning from the place where the business is transacted, the claim for which shall in all cases be verified and paid as provided in section eight (8). [28 G. A., ch. 58, § 15.]

Sec. **1657-q.** Prior to the annual convention of the department of agriculture, the state accountant, provided for in section one hundred sixty-one-a (161-a) of the supplement to the code, 1907, shall examine and report upon all financial business of the department of agriculture, said report to be made to the executive council and be published in accordance with the provisions of section one hundred sixty-three (163) of the code, and acts amendatory thereof. [28 G. A., ch. 58, § 16] [33 G. A.].

Approved February 23, A. D., 1909.

Sec. **1657-r. Premium list and rules.** The premium list and rules of exhibition shall be determined and published by the board prior to the first day of April in each year. [28 G. A., ch. 58, § 17.]

Sec. **1657-s. Corrective.** That where the words "board of directors of the state agricultural society" occur in the code or the acts amendatory thereto, the same shall be construed to mean and to refer to the state board of agriculture; and the words "state society" and "state agricultural society" shall be construed to mean and refer to the department of agriculture. [28 G. A., ch. 58, § 20.]

Sec. **1657-t. Amounts appropriated.** There is hereby appropriated annually from and after the first day of January nineteen hundred and one (1901) for the support of the office of the department of agriculture, twenty-four hundred dollars ($2,400) and for insurance and improvements of buildings on the state fair grounds the sum of one thousand dollars ($1,000) or so much thereof as shall be necessary, and the auditor of state shall draw a warrant therefor upon the order of the department of agriculture signed by the president and secretary thereof, in such sums and at such times as the board shall deem necessary. The state shall not be liable for the payment of any premiums offered by the state board of agriculture, nor for any expenses or liabilities incurred by said board, except, as expressly provided for in this act. [28 G. A., ch. 58, § 21.]

Sec. **1658. County societies—premiums.** County and district agricultural societies may annually offer and award premiums for the improvement of stock, tillage, crops, implements, mechanical fabrics, articles of domestic industry, and such other articles and improvements as they may think proper, and so regulate the amount thereof and the different grades as to induce general competition. [C., '73, § 1109; R., § 1697.]. [28 G. A., ch. 59, § 2.]

Under the statutory provision authorizing agricultural societies to award premiums, etc., such society has power to authorize trials of speed on its grounds and such lawful games or amusements as its officers and directors may in their discretion see fit to arrange for in furnishing amusement and entertainment as well as instruction to those attending. Therefore the directors of such society are not liable in their individual capacity for neglect to provide protection to spectators against dangers incident to the playing of such games as are authorized. Williams v. Dean, 111 N. W. 931.

Sec. **1659. List of awards.** Each county and district society shall annually publish a list of the awards, and an abstract of the treasurer's account, in one or more newspapers of the county, with a report of its proceedings during the year, and a synopsis of the awards. It shall also make a report of the condition of agriculture in the county to the board of directors of the state agricultural society, which shall be forwarded on or before the first day of November in each year to the secretary of said society. The auditor of state, before issuing a warrant in favor of such societies for any amount, shall demand the certificate of the secretary of the state society that such report has been made. Any society failing to report on or before the first day of November shall not receive state aid for that year. [C., '73, § 1110; R., § 1698.] [28 G. A., ch. 59, § 2.]

Sec. **1660. Appropriation from county—question submitted—notice—title in county—control.** When a county agricultural society shall have produced in fee simple, free from incumbrance, land for fair grounds, not less than ten acres in extent, or hold and occupy such amount of land by virtue of a lease, and own and have thereon buildings and improvements worth at least two thousand dollars, the board of supervisors of the county may appropriate and pay to it a sum not exceeding one hundred dollars for every thousand inhabitants in the county, to be expended by it in fitting up or purchasing such fair grounds, but for no other purpose; but the agregate amount so appropriated shall not exceed one thousand dollars to any one society. The board of supervisors are further authorized to purchase real estate for county fair purposes, in sums not exceeding one thousand dollars ($1,000.00), providing however, that the board of supervisors shall first have submitted to the legal voters of the county a proposition therefor, and voted for by a majority of all persons voting for and against such proposition at a general or special election; notice to be given as provided in section four hundred twenty-three (423) of the supplement to the code. And the board of supervisors shall not exceed in the purchase of such real estate, the amount so voted for. The title of such real estate when purchased to be taken in the name of the county, and the board of supervisors shall place such real estate under the control and management of an incorporated county fair society, as long as an annual county fair is maintained by such corporation on said real estate. And said corporation is authorized to erect and maintain buildings and make such other improvements on said real estate as is necessary, but the county shall not be liable for such improvements, or the expenditures therefor. The right of such county fair society to the control and management of said real estate may be terminated by the board of supervisors whenever well conducted agricultural fairs are not annually held thereon. [C., '73, § 111.] [32 G. A., ch. 17, § 2.]

Sec. **1661-a. Repeal—state aid to district or county society—failure to report.** That section sixteen hundred sixty-one (1661) of the code be and is hereby repealed and the following enacted in lieu thereof:

Any county or district agricultural society, upon filing with the auditor of state affidavits of its president, secretary, and treasurer showing what sum has actually been paid out during the current year for premiums, not including races, or money paid out to secure games or other amusements, and that no gambling devices or other violations of law were permitted, together with a certificate from the secretary of the state society showing that it has reported according to law, shall be entitled to receive from the state treasury a sum equal to forty per cent. of the amount so paid in premiums up to five hundred dollars, and ten per cent. additional of the amount paid in premiums over five hundred dollars; but in no case shall the amount paid to any society exceed the sum of three hundred dollars. When any society fails to report, according to law, on or before the first day of November, that society shall not receive a warrant from the state auditor for that year, but the secretary of the state board of agriculture shall notify the county auditor of the county in which the society is located of such failure, and the board of supervisors may appoint a delegate to the annual meeting or state agriculture [agricultural] convention, said delegate to be a resident of said county. Whenever one hundred (100) citizens of any county in the State that does not have a county or district fair, receiving the state aid as above provided, or that in any year may not hold a county fair, shall organize what is known as a "short course" with a president, secretary, treasurer and executive committee of not less than five members (5) and shall hold a session of four (4) or more days at some place within the county and give a program, designed to promote the science of agriculture and domestic science, said "short course" organization upon filing with the auditor of state by its president, secretary and treasurer a statement showing what sums it has actually paid out in value for premiums during the period of the short course of that year, together with the certificate of the secretary of the state board of agriculture showing that it has reported according to law as provided in cases of county and district agricultural societies, shall be entitled to receive from the state treasurer a sum equal to forty per cent of the amount paid in premiums, but in no case shall the amount so received in any county exceed two hundred dollars ($200.00). The payment from the state treasury herein provided for shall be made by warrant of the state auditor as soon as due proof is made to him of the holding of said "short course" as herein provided; and there is hereby appropriated out of any money in the state treasury not otherwise appropriated, the sum necessary to pay the amount contemplated in this section. [27 G. A., ch. 43, § 1.] [28 G. A., ch. 59, § 1.] [33 G. A.]

Sec. **1672. Printing and distribution.** There shall be printed four thousand copies of the report, which shall be bound in muslin covers, uniform in style with the reports heretofore made, which shall be distributed by the secretary of state, as follows: Six copies each to the governor, lieutenant-governor, secretary of state, auditor, treasurer, attorney-general, judges of the supreme court, and each member of the general assembly; one hundred to the agricultural college, five copies to the university, two to each incorporated college in the state, one to each auditor, and clerk of the district court, to be kept in his office, and one to each newspaper published in the state; the remainder to be distributed by direction of the society. [18 G. A., ch. 6; C., '73, § § 1121.] [29 G. A., ch. 68, § 2.]

Sec. **1673. Appropriation for.** The sum of four thousand dollars is hereby appropriated annually for the use and benefit of said society, which shall be paid upon the warrant of the auditor of state, upon the order of the president of said society, in such sums and at such times as may be for the interests of said society. [20 G. A., ch. 128; C., '73, § 1121.] [29 G. A., ch. 68, § 2.]

Sec. **1675. Farmers' institutes—state aid—appropriation.** When forty or more farmers of a county organize a farmers' institute, with a president, secretary, treasurer, and an executive committee of not less than three outside of such officers and hold an institute, remaining in session not less than two days in each year, which institute may be adjourned from time to time and from place to place in said county, the secretary of the state board of agriculture, upon the filing with him a report of such institute and an itemized statement under oath showing that the same has been organized and held and for what purpose the money expended has been used, shall certify the same to the auditor of state, which state auditor shall remit to the county treasurer of each county his warrant for the amount so expended not to exceed seventy-five dollars and there is hereby appropriated out of the moneys in the state treasury not otherwise appropriated, a sum not to exceed seventy-five dollars annually for such institute work in each county. No officer of any such farmers' institute shall receive directly or indirectly any compensation from said fund for said services as such officer. The report provided for in this section shall be filed with the secretary of the state board of agriculture on or before the first day of June of each year. When any institute fails to report on or before the first day of June that institute shall not receive state and for that year.

All counties not holding a regular farmers' institute and where a short course, is held, the money appropriated for such farmers' institute as provided in section 1675 of the supplement to the Code, 1907, shall apply and be payable to said "short course" upon proof of such organization and such "short course" having been held, being filed with the state board of agriculture by the officers of said short course. [24 G. A., ch. 58, § 1.] [29 G. A., ch. 69, § 1.] [33 G. A.]

Sec. **1679. Stations—bulletins.** The director shall co-operate with the board of directors of the state agricultural society to establish volunteer stations at one or more places in each county in the state, and in appointing observers thereat; to supervise such stations, receive reports of meteorological events and crop conditions therefrom, and tabulate the same for permanent record; to issue weekly weather and crop bulletins during the season from April first to October first, and to edit and cause to be published at the office of the state printer a monthly weather and crop review, containing meteorological and agricultural matter of public interest and educational value. The state printer shall print three thousand copies thereof, which shall be distributed from the office of the department of agriculture. The directors may require a larger issue for such subscribers as will pay the expense thereof. The director shall have advisory power to co-operate with the farmers' institute organizations of the several counties of the state, for the purpose of arranging dates and providing speakers or lecturers, with a view to economy of time and travel in attending institutes; such institutes to be held as nearly as practicable in circuits,. and at such dates as will enable the speakers to attend two or more such institutes each week. [24 G. A., ch. 63, § 2; 23 G. A., ch. 29, § 4.] [28 G. A., ch. 58, § 19.]

Sec. **1681. Appropriation.** There is hereby appropriated, out of any money in the state treasury not otherwise appropriated, the sum of two thousand seven hundred dollars annually, to be drawn and expended upon the order of the president and secretary of the department of agriculture, for such service, including the salary of the director, which shall not exceed fifteen hundred dollars per annum. [24 G. A., ch. 63, § 1.] [28 G. A., ch. 58, § 19.]

CROP STATISTICS.

AN ACT to repeal section thirteen hundred and sixty-three (1363) of the code, relating to statistics, and enacting a substitute therefor.

Be it enacted by the General Assembly of the State of Iowa:

Sec. **1363. Crop statistics.** Each year the county auditor shall deliver to each assessor the necessary blanks for recording, as to each person whose property is listed, statistics of the previous year as to the number of acres, average and total yield of corn, oats, wheat, and such other crops and information as may be in their possession which may be called for relative to agriculture, agricultural production, agricultural labor, live stock, poultry and egg production, for publication in the Iowa Year Book of Agriculture. The assessor shall require each person whose property is listed to make answers to such inquiries as may be necessary to enable him to return the foregoing statistics; and said blanks with such entries shall be returned to the county auditor on or before the fifteenth day of April, who shall tabulate the same by townships, and forward the returns thereof to the secretary of the state board of agriculture not later than the tenth day of May. The secretary of the state board of agriculture shall provide and cause to be delivered to the county auditor before the first week in January the blanks to be used by the assessors and county auditor for the proper return of the information required in this section. [33 G. A.]

Approved March 25, A. D. 1909.

STATE ENROLLMENT OF STALLIONS.

Section **2341. Repeal.** That chapter ninety-eight (98), of the acts of the Thirty-first General Assembly be, and the same is hereby repealed, and the following enacted in lieu thereof:

Sec. **2341-a. Registration of pedigree—fee.** Any owner or keeper of any stallion, kept for public service, or any owner or keeper of any stallion kept for sale, exchange or transfer, who represents such animal to be pure bred, shall cause the same to be registered in some stud book recognized by the Department of Agriculture at Washington, D. C., for the registration of pedigrees, and obtain a certificate of registration of such animal. He shall then forward the same to the secretary of the state board of agriculture of the State of Iowa, whose duty it shall be to examine and pass upon the correctness or genuineness of such certificate filed for enrollment. In making such examination, said secretary shall use as his standard the stud books recognized by the Department of Agriculture at Washington, D. C., and shall accept as pure bred any animal registered in any such stud books. And if such registration is found to be correct and genuine, he shall issue a certificate under the seal of the department of agriculture, which certificate shall set forth the name, sex, age and color of the animal, also the volume and page of the stud book in which said animal is registered. For each enrollment and certificate he shall receive the sum of one dollar, which shall accompany the certificate of registration when forwarded for enrollment.

Sec. **2341-b. Posting certificate of registration.** Any owner or keeper of a stallion for public service, who represents or holds such animal as pure bred, shall place a copy of the certificate of the state board of agriculture on the door or stall of the stable where such animal is usually kept.

Sec. **2341-c. Grade stallion.** Any owner or keeper of a stallion kept for public service, for which a state certificate has not been issued, must advertise said horse or horses by having printed hand bills, or posters, not less than five by seven inches in size, and said bills or posters must have printed thereon immediately preceding or above the name of the stallion, the words "grade stallion," in type not smaller than one inch in height, said bills or posters to be posted in a conspicuous manner at all places where the stallion or stallions are kept for public service.

*Sec. **2341-d. Transfer of certificate—fee.** When the owner of any registered stallion shall sell, exchange or transfer same, he shall file said certificate, accompanying the same with a fee of fifty cents, with the secretary of the state board of agriculture, who shall upon receipt of the state certificate properly transferred and upon payment of the required fee, issue a new certificate to the then owner of the animal. All fees provided by this act shall go into the treasury of the department of agriculture.*

Sec. **2341-e. Publishing false pedigrees—penalty.** Any person who shall fraudulently represent any animal, horse, cattle, sheep or swine, to be pure bred, or any person who shall post or publish, or cause to be posted or published, any false pedigree or certificate, or shall use any stallion for public service, or sell, exchange or transfer any stallion, representing such animal to be pure bred, without first having such animal registered, and obtaining the certificate of the state board of agriculture as hereinbefore provided, or who shall violate any of the provisions of this act, shall be guilty of a misdemeanor, and be punished by a fine of not more than one hundred dollars, or imprisoned in the county jail not exceeding thirty days, or by both such fine and imprisonment.

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*As re-enacted by the Thirty-third General Assembly.

LIEN LAW FOR SERVICE FEE.

AN ACT providing that owners or keepers of stallions shall have a lien upon the progeny of any such animal for the service fee thereof.

Be it enacted by the General Assembly of the State of Iowa:

Section **1.** The owner or keeper of a stallion kept for public services who has complied with sections twenty-three hundred and forty-one-a (2341-a), twenty-three hundred and forty-one-b (2341-b), twenty-three hundred and forty-one-c (2341-c) and twenty-three hundred and forty-one-d (2341-d) of the Supplement to the Code, 1907, shall have a prior lien upon the progeny of such stallion to secure the amount due such owner or keeper for the service of such stallion, resulting in said progeny, provided, that where such owner or keeper misrepresents such stallion by false pedigree no lien shall be obtained.

Sec. **2.** The lien herein provided for shall remain in force for a period of six months from the birth of said progeny and shall not be enforced thereafter.

Sec. **3.** The owner or keeper of such stallion may enforce the lien herein provided by placing in the hands of any constable an affidavit containing a description of the stallion and a description of the dam and the time and terms of service, and said constable shall thereupon take possession of said progeny and sell the same for non-payment of the service fee by giving the owner of said progeny ten (10) days written notice, which notice shall contain a copy of the affidavit and a full description of the progeny to be sold, the time and hour when, and the place at which the sale will take place, and posting for the same length of time in three public places in the township of such owner's residence a copy of such notice. If payment of the service fees and costs are not made before the date thus fixed, the constable may sell at public auction to the highest bidder such progeny and the owner or keeper of the stallion may be a bidder at such sale. The constable shall apply the proceeds, first, in the payment of the costs, second, in the payment of the service fee. Any surplus arising from sale shall be returned to the owner of the progeny.

Sec. **4.** The right of the owner or keeper to foreclose, as well as the amount claimed to be due, may be contested by anyone interested in so doing, and the proceedings may be transferred to the district court, for which purpose an injunction may issue, if necessary.

Approved April 8, A. D. 1909.

LAWFUL FENCE.

AN ACT to repeal section twenty-three hundred and sixty-seven (2367) of the Code defiining a lawful fence and to enact a substitute therefor.

Sec. **2367. Lawful fence defined.** A lawful fence shall consist of three rails of good substantial material, or three boards not less than six (6) inches wide and three-quarters (¾) of an inch thick, such rails or boards to be fastened in or to good substantial posts, not more than ten (10) feet apart where rails are used, and not more than eight (8) feet apart where boards are used, or wire either wholly or in part, substantially built and kept in good repair; or any other kind of fence, which, in the opinion of the fence viewers, shall be equivalent thereto, the lowest bottom rail, wire or board not more than twenty (20) nor less than sixteen (16) inches from the ground, the top rail, wire or board, to be between forty-eight (48) and fifty-four (54) inches in height, and the center rail, wire or board not less than twelve (12) nor more than eighteen (18) inches above the bottom rail, wire or board; or it shall consist of three (3) wires, barbed with not less than thirty-six (36) iron barbs or two (2) points each, or twenty-six (26) iron barbs of four (4) points each, on each rod of wire, or of four (4) wires, two (2) thus barbed and two (2) smooth, the wires to be firmly fastened to posts not more than two (2) rods apart, with not less than two (2) stays between posts, or with posts not more than one (1) rod apart, without such stays, the top wire to be not more than fifty-four (54) nor less than forty-eight (48) inches in height. Provided, however, that all partition fences may be made tight by the party desiring it, and, when his portion is so completed, and securely fastened to good substantial posts, set firmly in the ground, not more than twenty (20) feet apart, the adjoining property owner shall construct his portion of the adjoining fence, in a like tight manner, same to be securely fastened to good substantial posts, set firmly in the ground not more than twenty (20) feet apart. All tight partition fences shall consist of not less than twenty-four (24) inches of substantial woven wire on the bottom, with three (3) strands of barb wire with not less than thirty-six (36) barbs of two points to the rod on top, the top wire to be not less than forty-eight (48) inches, nor more than fifty-four (54) inches high, or not less than eighteen (18) inch substantial woven wire on the bottom with four (4) strands of barb wire of not less than thirty-six (36) barbs of two points to the rod, the top wire to be not less than forty-eight (48) inches nor more than fifty-four (54) inches high, or good substantial woven wire not less than forty-eight (48) inches nor more than fifty-four (54) inches high. In case adjoining owners or occupants of land shall use the same for pasturing sheep or swine, each shall keep his share of the partition fence in such condition as shall restrain such sheep or swine. Upon the application of either owner, after notice given as prescribed in this chapter, the fence viewers shall determine all controversies arising under this section, including the partition fences made sheep and swine tight. [33 G. A.]

DESTRUCTION OF WEEDS.

AN ACT providing for the destruction of weeds and noxious weeds on the public highways and lands adjacent thereto; and the destruction of noxious weeds on railway right-of-ways and grounds and making it the duty of the township trustees and county supervisors to enforce the provisions of this act; amending the law as it appears in sections one thousand five hundred and twenty-eight (1528), of the Supplement to the Code, 1907, and repealing the law as it appears in sections one thousand five hundred and sixty-two (1562) and one thousand five hundred and sixty-two-a (1562-a) of the Supplement to the Code, 1907, and sections one thousand five hundred and sixty-four (1564), one thousand five hundred and sixty-five (1565) and five thousand and twenty-four (5024) of the code.

Be it enacted by the General Assembly of the State of Iowa:

Section **1.** It shall be the duty of every person, firm or corporation owning, occupying or controlling lands, town and city lots, land used as right of way, depot grounds or for other purposes to cut burn or otherwise entirely destroy all weeds of the kinds mentioned in section two (2) hereof at such times in each year and in such manner as shall prevent the said weeds from blooming or coming to maturity.

Sec. 2. The following weeds are hereby declared to be noxious weeds, namely, quack grass (agropyron repens), Canada thistle (cirsium arvense), cocklebur (xanthium canadense), wild mustard (brassica arvensis), sour or curled dock (Rumex crispus), smooth dock (rumex altissimus), buckhorn or ribbed plantain (plantago lanceolata), and wild parsnip (pastinaca sativa), horse nettle (solanum carolinense) and velvet weed or button weed (abutilon theophrasti) and burdock (arctium lappa).

Sec. 3. It shall be the duty of the township trustees or other officers responsible for the care of public highways in each township or county in this state to destroy or cause to be destroyed all noxious weeds mentioned in section two (2) hereof or unnecessary brush on the highways in such manner as to effectually prevent the production of their seeds or their propagation in any other manner, to warn out labor or to employ labor for this purpose in the same manner as for repairs to the highways, and for neglect or failure to perform this work they shall be subjected to the penalties in this act. If any occupant of lands adjacent to the public highways neglect or refuse to destroy the noxious weeds upon his land, or shall fail to prevent the said noxious weeds from blooming or coming to maturity, when such weeds are likely to be the means of infesting the public highway, or upon complaint of any land owner to the township trustees that his lands have been or are likely to be infested by weeds from the lands of another including railway right of way, the trustees shall make investigation of such condition or complaint and if the same appears to be well founded they shall make an order fixing the time within which the weeds shall be prevented from maturing seed, and an order that within one year such noxious weeds shall be permanently destroyed, and prescribing the manner of their destruction and shall forthwith give notice to the occupant of the lands where the noxious weeds exist, and if he shall neglect to obey such order within the time so ordered the trustees may cause such noxious weeds to be prevented from maturing seeds or may cause such noxious weeds to be permanently destroyed and the cost of the work shall be recovered from the owner by a special tax to be certified by the township clerk in the same manner as other road tax not paid.

Sec. **4.** The destruction of noxious weeds in the public highway and other public places is hereby made a part of the road work of the township trustees and the county supervisors and they shall have authority to expend road funds for the destructtion of weeds.

Section **5.** The law as it appears in section fifteen hundred and twenty-eight (1528) of the supplement to the Code, 1907, is hereby amended as follows, namely:

By inserting after the comma in the eighth line thereof the following words: "And for the destruction of noxious weeds in public highways and other public places," and by striking out the word "Four" in the tenth line of said section and inserting the word "six" in lieu thereof.

Section now reads as follows:

Sec. **1528. Powers and duties of trustees.** The township trustees of each township shall meet on the first Monday in April, or as soon thereafter as the assessment book is received by the township clerk, and on the first Monday in November, in each year. At the April meeting, said trustees shall determine:

1. The rate of property tax to be levied for the succeeding year for roads, bridges, guideboards, plows, scrapers, tools, and machinery adapted to the construction and repair of roads, and for the destruction of noxious weeds in public highways and other public places, and for the payment of any indebtendess previously incurred for road purposes, and levy the same, which shall not be less than one or more than six mills on the dollar on the amount of the township assessment for that year, which when collected, shall be expended under the direction and order of the township trustees;

2. The amount that will be allowed for a day's labor done by a man, and by a man and team, on the road. To certify to the board of supervisors the desire for an additional road tax, of not to exceed one mill, to be levied in whole or in part by the board of supervisors as hereinafter provided. At the November meeting, they shall settle with the township clerk and supervisors of roads.

Sec. **6.** Between November and the succeeding April of each year the county supervisors shall call a meeting of the township trustees and the road supervisors of the county to consider the best methods of road work and weed destruction, and in the public interest may secure the services of experts to give instruction in road building and weed destruction. For such attendance the same compensation shall be allowed to the trustees and road supervisors and the county supervisors as is allowed by law for other services, to be paid as other expenses. The expenses of experts herein provided for may be paid from the county road fund.

Sec. **7.** It shall be the duty of township trustees and other officers directly responsible for the care of public highways to cause to be cut near the surface all weeds on the public highways in their respective districts at such times and in such manner as to prevent seeds from maturing.

Sec. **8.** Any person, firm or corporation violating any of the provisions of this act, or any township trustees, inspector or other officer who neglects or fails to perform the duties incumbent on him under the provisions of this act, shall be guilty of a misdemeanor and shall be punished by a fine not exceeding one hundred dollars ($100.00).

Sec. **9.** The law as it appears in sections fifteen hundred and sixty-two (1562), fifteen hundred sixty-two-a (1562-a) and fifteen hundred sixty-three (1563) of the Supplement to the Code, 1907, and sections fifteen hundred and sixty-four (1564) and fifteen hundred and sixty-five (1565) and section five thousand and twenty-four (5024) of the Code are hereby repealed.

Approved April 21, A. D. 1909.

PART XVI

Directory of Associations and Organizations Representing Agricultural Interests in Iowa and Other States.

Iowa Department of Agriculture—President, C. E. Cameron, Alta; Vice-President, W. C. Brown, Clarion; Secretary, J. C. Simpson, Des Moines; Treasurer, G. S. Gilbertson, Des Moines.

Iowa State Horticultural Society—President, W. M. Bomberger, Harlan; Vice-President, William Langham, Cedar Rapids; Secretary, Wesley Greene, Davenport; Treasurer, Elmer M. Reeves, Waverly.

Iowa Park and Forestry Association—President, Bohumel Shimek, Iowa City; Vice-President, J. S. Ruby, Marshalltown; Secretary, Wesley Greene, Davenport; Treasurer, A. T. Erwin, Ames.

Society of Iowa Florists—President, Chas. N. Page, Des Moines; Vice-President, J. S. Wilson, Des Moines; Secretary, Wesley Greene, Davenport; Treasurer, Peter Lambert, Des Moines.

Western Grain Dealers' Association—President, J. A. Tiedeman, Sioux City; Vice-President, I. E. Jackson, Cedar Rapids; Secretary, Geo. A. Wells, Des Moines; Treasurer, Geo. A. Wells, Des Moines.

Iowa Corn Growers' Association—President, John Sundberg, Whiting; Vice-President, J. W. Coverdale, Elwood; Secretary, B. W. Crossley, Ames; Treasurer, Fred McCulloch, Hartwick.

Corn Belt Meat Producers' Association—President, A. Sykes, Des Moines; Vice-President, C. W. Maher, Fort Dodge; Secretary, H. C. Wallace, Des Moines; Treasurer, Chas. Goodenow, Wall Lake.

Iowa State Highway Commission—Directors, A. Marston and C. F. Curtiss, Ames; Highway Engineer, T. H. MacDonald, Ames; Engineer of Road Machinery, J. B. Davidson, Ames; Consulting Bridge Engineer, J. E. Kirkham, Ames; Secretary, C. S. Nichols, Ames.

The Farmers' Grain Dealers' Association—President, J. H. Brown, Rockwell; Vice-President, B. Hathaway, Kingsley; Secretary, C. A. Messerole, Gowrie; Treasurer, D. D. Payne, Eagle Grove.

Iowa Swine Breeders' Association—President, L. H. Roberts, Paton; Vice-President, H. F. Hoffman, Washta; Secretary, C. C. Carlin, Des Moines; Treasurer, C. C. Carlin, Des Moines.

Iowa State Dairy Association—President, W. B. Barney, Hampton; Vice-President, L. S. Edwards, Parkersburg; Secretary, W. B. Johnson, Des Moines; Treasurer, F. L. Odell, Des Moines.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

Adair—Adair County Agricultural Society, Greenfield; President, M. S. Mitchell, Greenfield; Secretary, Fred D. Martin, Greenfield.

Adair—Adair District Fair Association, Adair; President, W. C. Marsh, Adair; Secretary, A. C. Savage, Adair.

Adams—Adams County Agricultural Society, Corning; President, S. M. Richey, Corning; Secretary, Geo. E. Bliss, Corning.

Allamakee—Allamakee County Agricultural Society, Waukon; President, S. H. Opfer, Waukon; Secretary, A. C. Larson, Waukon.

Appanoose—Appanoose County Agricultural Society, Centerville; President, J. A. Bradley, Centerville; Secretary, H. A. Russell, Centerville.

Audubon—Audubon County Agricultural Society, Audubon; President, Geo. W. Hoover, Audubon; Secretary, S. C. Curtis, Audubon.

Benton—Benton County Agricultural Society, Vinton; President, Wm. H. Hanna, Vinton; Secretary, Arad Thompson, Vinton.

Black Hawk—LaPorte City District Fair Association, LaPorte City; President, Jas. Husman, LaPorte City; Secretary, F. E. Hoyt, LaPorte City.

Bremer—Bremer County Fair Association, Waverly; President, E. C. Bennett, Waverly; Secretary, L. C. Oberdorf, Waverly.

Boone—Boone County Agricultural Society, Ogden; President, C. H. Williams, Ogden; Secretary, W. C. Treloar, Ogden.

Boone—Boone Driving Park and Fair Association, Boone; President, J. S. Crooks, Boone; Secretary, S. M. Burnside, Boone.

Buchanan—Buchanan County Agricultural Society, Independence; President, Wm. Woodward, Independence; Secretary, P. G. Freeman, Independence.

Buena Vista—Buena Vista County Agricultural Society, Alta; President, M. Adams, Alta; Secretary, C. H. Wegerslev, Alta.

Butler—Butler County Agricultural Society, Allison; President, John Coster, Shell Rock; Secretary, W. C. Shepard, Allison.

Calhoun—Calhoun County Fair Association, Manson; President, Thos. Griffin, Manson; Secretary, C. J. Kaskey, Manson.

Calhoun—Rockwell City Fair Association, Rockwell City; President, Andrew Stewart, Rockwell City; Secretary, W. Q. Stewart, Rockwell City.

Cass—Cass County Agricultural Society, Atlantic; President, O. W. Peterson, Atlantic; Secretary, W. J. Pellett, Atlantic.

Cass—Massena District Fair Association, Massena; President, S. D. Wyckoff, Massena; Secretary, D. P. Hogan, Massena.

Cedar—Tipton Fair Association, Tipton; President, P. W. Moffit, Tipton; Secretary, C. F. Simmermaker, Tipton.

Cerro Gordo—Northern Iowa Agricultural Society, Mason City; President, Geo. H. Purdy, Mason City; Secretary, C. H. Barber, Mason City.

Chickasaw—Big Four Fair Association, Nashua; President, W. P. Raymond, Nashua; Secretary, C. L. Putney, Nashua.

Clayton—Clayton County Agricultural Society, National; President, Jos. Matt, St. Olaf; Secretary, Henry Luehsen, Garnavillo.

Clayton—Strawberry Point District Agricultural Society, Strawberry Point; President, Parke Taylor, Strawberry Point; Secretary, F. J. Gressler, Strawberry Point.

Clayton—Elkader Fair and Track Association, Elkader; President, Henry Koehn, Elkader; Secretary, W. W. Davidson, Elkader.

Clinton—Clinton County Agricultural Society, De Witt; President, D. Armentrout, De Witt; Secretary, E. J. Quigley, De Witt.

Clinton—Clinton District Agricultural, Fine Stock and Fair Association, Clinton; President, John L. Wilson, Almont; Secretary, John B. Ahrens, Lyons.

Crawford—Crawford County Fair Association, Arion; President, Thos. Rea, Arion; Secretary, A. A. Conrad, Arion.

Davis—Davis County Agricultural Society, Bloomfield; President, W. P. Huffman, Bloomfield; Secretary, H. C. Leach, Bloomfield.

Delaware—Delaware County Agricultural Society, Manchester; President, L. Sly, Manchester; Secretary, T. Wilson, Manchester.

Des Moines—Des Moines County Fair Association, Burlington; President, Jno. B. Hunt, Burlington; Secretary, C. C. Fowler, Burlington.

Emmet—Estherville Agricultural Society, Estherville; President, W. A. Beymer, Estherville; Secretary, A. J. Rhodes, Estherville.

Fayette—Fayette County Agricultural Society, West Union; President, J. S. Smith, West Union; Secretary, E. A. McIlree, West Union.

Fayette—Oelwein District Fair Association, Oelwein; President, Don Ross, Oelwein; Secretary, W. J. Brennan, Oelwein.

Floyd—Floyd County Agricultural Society, Charles City; President, W. D. Lindaman, Charles City; Secretary W. B. Johnson, Charles City.

Franklin—Franklin County Agricultural Society, Hampton; President, D. B. Henderson, Hampton; Secretary, Sherwood Clock, Hampton.

Grundy—Grundy County Agricultural Society, Grundy Center; President, H. N. Dilly, Grundy Center; Secretary, L. M. Hawn, Grundy Center.

Guthrie—Guthrie Center Agricultural Society, Guthrie Center; President, S. J. Reed, Guthrie Center; Secretary, T. E. Grisell, Guthrie Center.

Hamilton—Hamilton County Fair Association, Webster City; President, T. A. P. Tatham, Webster City; Secretary, Fred Hahne, Webster City.

Hancock—Hancock County Agricultural Society, Britt; President, Dr. A. J. Cole, Britt; Secretary, J. L. Manuel, Britt.

Hardin—Hardin County Agricultural Society, Eldora; President, A. S. Howell, Eldora; Secretary, Harry S. Martin, Eldora.

Harrison—Harrison County Agricultural Society, Missouri Valley; President, Frank Zahner, Modale; Secretary, W. H. Witherow, Missouri Valley.

Henry—Henry County Agricultural Society, Mt. Pleasant; President, T. F. Campbell, Mt. Pleasant; Secretary, O. N. Night, Mt. Pleasant.

Henry—Winfield Fair Association, Winfield; President, W. D. Garmoe, Winfield; Secretary, A. L. Bergsten, Winfield.

Humboldt—Humboldt County Fair Association, Humboldt; President, S. H. Grove, Gilmore City; Secretary, John Cunningham, Humboldt.

Iowa—Iowa County Agricultural Society, Marengo; President, F. S. Wilson, Marengo; Secretary, Alex McLennan, Marengo.

Iowa—Victor District Agricultural Society, Victor; President, Chas. Raffinsperger, Victor; Secretary, J. P. Bowling, Victor.

Iowa—Williamsburg Pavilion and Fair Association, Williamsburg; President, M. Harrington, Williamsburg; Secretary, Chas. Fletcher, Williamsburg.

Jackson—Jackson County Agricultural Society, Maquoketa; President, Jos. Dostal, Maquoketa; Secretary, B. D. Ely, Maquoketa.

Jasper—Jasper County Agricultural Society, Newton; President, C. F. Sauerman, Newton; Secretary, J. H. Gribben, Newton.

Jefferson—Jefferson County Agricultural Society, Fairfield; President, J. P. Manatrey, Fairfield; Secretary, Chas. H. Gage, Fairfield.

Johnson—Johnson County Agricultural Society, Iowa City; President, Bruce Moore, Iowa City; Secretary, George Hitchcock, Iowa City.

Jones—Jones County Agricultural Society, Monticello; President, O. H. Soetje, Monticello; Secretary, Fred W. Koop, Monticello.

Jones—Anamosa Fair Association, Anamosa; President, Frank Johnson, Anamosa; Secretary, L. W. Russell, Anamosa.

Keokuk—What Cheer District Agricultural Society, What Cheer; President, Jas. Stephenson, What Cheer; Secretary, Geo. A. Poff, What Cheer.

Kossuth—Kossuth County Agricultural Society, Algona; President, J. M. Farley, Whittemore; Secretary, W. E. McDonald, Algona.

Lee—Lee County Agricultural Society, Donnellson; President, T. H. Donnell, Donnellson; Secretary, Chris Haffner, Donnellson.

Lee—West Point District Agricultural Society, West Point; President, E. L. Trevitt, West Point; Secretary, John Walljasper, Ft. Madison.

Linn—Wapsie Valley Fair Association, Central City; President, E. M. Lanning, Alburnett; Secretary, E. E. Henderson, Central City.

Linn—Prairie Valley Fair Association, Fairfax; President, H. W. Shank, Fairfax; Secretary, C. J. Knickerbocker, Fairfax.

Linn—Marion Inter-State Fair Association, Marion; President, C. A. Patten, Marion; Secretary, J. B. Travis, Marion.

Louisa—Louisa County Agricultural Society, Wapello; President, S. F. Small, Wapello; Secretary, J. D. Deihl, Wapello.

Louisa—Columbus Junction District Fair Association, Columbus Junction; President, T. J. Klotz, Columbus Junction; Secretary, N. T. Hendrix, Columbus Junction.

Lyon—Lyon County Fair and Agricultural Association, Rock Rapids; President, A. S. Wold, Rock Rapids; Secretary, Geo. H. Watson, Rock Rapids.

Madison—Madison County Agricultural Society, Winterset; President, Elmer Orris, Winterset; Secretary, W. E. Grismer, Winterset.

Mahaska—New Sharon District Agricultural Society, New Sharon; President, C. G. Tice, Taintor; Secretary, C. F. Momyer, New Sharon.

Marion—Lake Prairie District Agricultural Society Pella; President, T. D. Tice, Pella; Secretary, J. P. Klein, Pella.

Marshall—Eden District Agricultural Society, Rhodes; President, A. F. Pike, Rhodes; Secretary, H. M. Weeks, Rhodes.

Marshall—Marshall County Fair Association, Marshalltown; President, J. B. Classen, Green Mountatin; Secretary, W. M. Clark, Marshalltown.

Mills—Mills County Agricultural Society, Malvern; President, Sherman Jones, Malvern; Secretary, I. J. Swain, Malvern.

Mitchell—Mitchell County Agricultural Society, Osage; President, Richard Dorsey, Osage; Secretary, W. H. Gable, Osage.

Monona—Monona County Fair Association, Onawa; President, G. O. Holbrook, Onawa; Secretary, A. W. Burgess, Onawa.

Montgomery—Montgomery County Fair Association, Red Oak; President, Henry Ebert, Red Oak; Secretary, W. S. Ellis, Red Oak.

Muscatine—Union District Agricultural Society, West Liberty; President, J. L. Peters, West Liberty; Secretary, W. H. Shipman, West Liberty.

Muscatine—Wilton Fair Association, Wilton Junction; President, L. N. Ayres, Wilton Junction; Secretary, H. Wildasin, Wilton Junction.

O'Brien—O'Brien County Agricultural Society, Sutherland; President, Otto Peters, Sutherland; Secretary, J. B. Murphy, Sutherland.

O'Brien—Sheldon District Fair Association, Sheldon; President, C. H. Runger, Sheldon; Secretary, John Maus, Sheldon.

Page—Clarinda Fair Association, Clarinda; President, C. E. McDowell, Clarinda; Secretary, J. C. Beckner, Clarinda.

Page—Shenandoah Fair Association; President, Chas. Aldrich, Shenandoah; Secretary, A. W. Goldberg, Shenandoah.

Palo Alto—Palo Alto Fair and Racing Association, Emmetsburg; President, W. S. Parnham, Emmetsburg; Secretary, F. H. Wells, Emmetsburg.

Pocahontas—Big Four District Fair Association, Fonda; President, R. F. Beswick, Fonda; Secretary, John P. Mullen, Fonda.

Pottawattamie—Pottawattamie County Fair Association, Avoca; President, D. Gross, Avoca; Secretary, C. H. Read, Avoca.

Poweshiek—Poweshiek County Central Agricultural Society, Malcom; President, Wm. McClure, Malcom; Secretary, James Nowak, Malcom.

Poweshiek—Poweshiek County Central Agricultural Society, Grinnell; President, Samuel Jacobs, Jacobs; Secretary, I. S. Bailey, Jr., Grinnell.

Ringgold—Tingley Fair Association, Tingley; President, C. M. Richardson, Tingley; Secretary, L. F. Hall, Tingley.

Sac—Sac County Agricultural Society, Sac City; President, W. L. Stum, Sac City; Secretary, S. L. Watt, Sac City.

Shelby—Shelby County Agricultural Society, Harlan; President, W. L. Baughn, Harlan; Secretary, Fred Frazier, Harlan.

Sioux—Sioux County Agricultural Society, Orange City; President, A. Van der Meide, Orange City; Secretary, H. Slikkerveer, Orange City.

Sioux—Rock Valley District Fair Association, Rock Valley; President, James Walpole, Rock Valley; Secretary, D. J. Scanlon, Rock Valley.

Story—Story County Agricultural Society, Nevada; President, P. Sugart, Nevada; Secretary, Winfield S. Smith, Nevada.

Tama—Tama County Fair Association, Toledo; President, Isaac Voorhes, Tama; Secretary, A. G. Smith, Toledo.

Taylor—Taylor County Agricultural Society, Bedford; President, G. Hook, Bedford; Secretary, F. N. Lewis, Bedford.

Union—Creston District Fair Association, Creston; President, N. D. Merrill, Creston; Secretary, J. M. McCornack, Creston.

Van Buren—Milton District Agricultural Society, Milton; President, E. F. Bell, Milton; Secretary, D. A. Miller, Milton.

Wapello—Eldon Big Four Fair Association, Eldon; President, D. A. Jay, Eldon; Secretary, H. R. Baker, Eldon.

Warren—Warren County Fair Association, Indianola; President, Lee Talbott, Indianola; Secretary, Joe McCoy, Indianola.

Winnebago—Forest City Park and Fair Association, Forest City; President, John Wheeler, Forest City; Secretary, C. K. Nelson, Forest City.

Winnebago—Buffalo Center District Fair and Driving Association, Buffalo Center; President, F. T. Sparks, Buffalo Center; Secretary, P. Boye, Buffalo Center.

Winneshiek—Winneshiek County Agricultural Society, Decorah; President, G. F. Baker, Decorah; Secretary, L. L. Cadwell, Decorah.

Worth—Worth County Agricultural Society, Northwood; President, Nels Thorson, Northwood; Secretary, E. E. Miller, Northwood.

Wright—Wright County Agricultural Society, Clarion; President, Frank Wilson, Clarion; Secretary, Chas. Rotzler, Clarion.

FARMERS' COUNTY INSTITUTES IN IOWA.

Adair—President, A. C. Savage, Adair; Secretary, D. J. Cowden, Adair.

Adams—President, C. T. O'Key, Prescott; Secretary, T. E. Stanley, Prescott.

Appanoose—President, H. H. Phillips, Centerville; Secretary, Jas. A. Price, Udell.

Benton—President, M. S. Tracy, Belle Plaine; Secretary, W. A. Montgomery, Belle Plaine.

Black Hawk—President, E. M. Lichty, Waterloo; Secretary, Ernest E. Sage, Waterloo.

Bremer—President, L. W. Stanger, Tripoli; Secretary, E. M. Reeves, Waverly.

Buchanan—President, O. K. Crew, Independence; Secretary, John Orr, Independence.

Buena Vista—President, C. F. Kinnie, Storm Lake; Secretary, S. R. Haines, Storm Lake.

Butler—President, Geo. Adair, Shell Rock; Secretary, E. E. Wilcox, Shell Rock.

Calhoun—President, Henry Parson, Rockwell City; Secretary, D. E. Harding, Rockwell City.

Cedar—President, H. P. Hartley, West Liberty; Secretary, W. A. Hirst, West Branch.

Cerro Gordo—President, D. M. McArthur, Mason City; Secretary, J. H. Carr, Swaledale.

Cherokee—President, E. F. Ritz, Washta; Secretary, A. T. Zimmerman, Washta.

Chickasaw—President, J. M. Heald, Nashua; Secretary, E. E. Tracy, Nashua.

Clay—President, C. M. Kilpatrick, Spencer; Secretary, Wm. F. Torbert, Spencer.

Clayton—President, Wm. Baldridge, Strawberry Point; Secretary, O. K. Whittock, Edgewood.

Clinton—President, D. L. Pascal, De Witt; Secretary, F. E. Russell, Follets.

Crawford—President, Edward Hess, Charter Oak; Secretary, R. H. Swat, Charter Oak.

Dallas—President, Edward Veal, Adel; Secretary, Geo. T. White, Dallas Center.

Decatur—President, L. D. Garber, Leon; Secretary, J. W. Long, Leon.

Delaware—President, L. J. Gates, Manchester; Secretary, J. Higman, Manchester.

Des Moines—President, Willis S. Mathews, Danville; Secretary, S. H. Sater, Danville.

Dickinson—President, Fred La Due, Spirit Lake; Secretary, Ike Mitchell, Spirit Lake.

Dubuque—President, W. A. Fairburn, Cascade; Secretary, Fred Kurt, Cascade.

Emmet—President, E. C. Bryant, Estherville; Secretary, I. J. Robinson, Estherville.

Fayette—President, E. H. Appleman, Clermont; Secretary, G. W. Van Atten, West Union.

Floyd—President, D. B. Swortwood, Nora Springs; Secretary, Frank Trigg, Rockford.

Franklin—President, Oliver Yelland, Sheffield; Secretary, A. C. Wolf, Hampton.

Fremont—President, T. E. James, Sidney; Secretary, Chas. L. Frazier, Sidney.

Greene—President, D. Wessling, Grand Junction; Secretary, L. Cochran, Scranton.

Grundy—President, Geo. L. Frost, Grundy Center; Secretary, Arthur Merritt, Grundy Center.

Guthrie—President, U. G. Chapman, Bagley; Secretary, Wm. Edwards, Guthrie Center.

Hamilton—President, E. C. Maylor, Stratford; Secretary, O. L. Swedhud, Stratford.

Hancock—President, Andrew Anderson, Goodel; Secretary, Will Quehl, Britt.

Hardin—President, J. B. Parmalee, Iowa Falls; Secretary, W. E. Carpenter, Iowa Falls.

Harrison—President, Wilson Doty, Missouri Valley; Secretary, Mrs. H. L. Jones, Missouri Valley.

Howard—President, C. C. Brown, Cresco; Secretary, Myron Converse, Cresco.

Humboldt—President, C. W. Adams, Humboldt; Secretary, John Cunningham, Humboldt.

Ida—President, A. C. Garner, Ida Grove; Secretary, L. C. Jordan, Ida Grove.

Iowa—President, Edward Boland, Williamsburg; Secretary, Robt. H. Edwards, Williamsburg.

Jackson—President, Geo. W. Blake, Maquoketa; Secretary, L. L. Littlefield, LaMotte.

Jasper—President, T. J. Kating, Newton; Secretary, John A. Hawn, Newton.

Jefferson—President, J. P. Manatrey, Fairfield; Secretary, W. A. Hook, Packwood.

Johnson—President, J. S. Ulch, Solon; Secretary, Frank Andrews, Morse.

Keokuk—President, W. S. Chacy, Nugent; Secretary, Andrew Strohman, Sigourney.

Kossuth—President, M. DeL Parsons, Irvington; Secretary, I. W. Hutchins, Algona.

Lee—President, Joe Fry, Weaver; Secretary, E. C. Lynn, Donnellson.

Linn—President, E. W. Penley, Central City; Secretary, F. B. Pierpoint, Central City.

Louisa—President, J. B. Laso, Oakville; Secretary, Jas. Duncan, Oakville.

Lucas—President, H. C. Dillman, Oakley; Secretary, J. C. Williamson, Chariton.

Lyon—President, T. E. Moen, Inwood; Secretary, L. M. Foote, Inwood.

Madison—President, Stephen A. Hays, Winterset; Secretary, W. I. Raymond, Winterset.

Mahaska—President, Thos. Soseman, Oskaloosa; Secretary, F. F. Everett, Lacey.

Marion—President, D. W. Ward, Knoxville; Secretary, J. D. Schlotterbach, Knoxville.

Marshall—President, E. M. Wentworth, State Center; Secretary, Merrit Green, Jr., Marshalltown.

Mills—President, J. M. Anthony, Glenwood; Secretary, D. L. Heinsheimer, Glenwood.

Mitchell—President, J. S. Cutler, Orchard; Secretary, D. F. Sheehan, Osage.

Monona—President, W. S. Whiting, Whiting; Secretary, W. C. Buskirk, Ute.

Monroe—President, W. S. Graham, Albia; Secretary, Loren Perrin, Albia.

Muscatine—President, Thomas Boot, Wilton Junction; Secretary, A. Rexroth, Moscow.

O'Brien—President, Frank Martin, Gaza; Secretary, Alvin Patten, Paullina.

Osceola—President, C. Schriever, Allendorf; Secretary, F. S. Redmond, Sibley.

Page—President, Lenus Hagglund, Essex; Secretary, Walter Klepinger, Essex.

Palo Alto—President, Charles J. Duhigg, Emmetsburg; Secretary, Geo. Smitn, Emmetsburg.

Pocahontas—President, F. K. Hawley, Laurens; Secretary, D. K. Folk, Pocahontas.

Polk—President, C. O. Garrett, Altoona; Secretary, A. D. Miller, Mitchellville.

Poweshiek—President, J. J. Axtell, Deep River; Secretary, F. B. Malcolm, Deep River.

Ringgold—President, E. E. Morris, Diagonal; Secretary, Grant Stahn, Diagonal.

Sac—President, A. L. Mason, Early; Secretary, C. D. Bogue, Early.

Scott—President, James R. Thompson, Long Grove; Secretary, R. McRohlfs, Davenport, R. F. D. No. 4.

Shelby—President, H. B. Kers, Harlan; Secretary, Wm. Bomberger, Harlan.

Sioux—President, J. C. Emery, Orange City; Secretary, Geo. A. Sheldon, Hull.

Story—President, W. P. George, Ames; Secretary, J. M. Chrisman, Nevada.

Tama—President (north), Mrs. F. Wood, Traer; Secretary, W. J. A. Irving, Traer. President (south), G. W. Carpenter, Tama; Secretary, W. H. Malin, Tama.

Taylor—President, Alex John, Bedford; Secretary, F. E. Wakeman, Bedford.

Union—President, L. E. Garland, Afton; Secretary, L. J. Day, Afton.

Van Buren—President, G. V. Leffler, Stockport; Secretary, F. E. Holland, Milton.

Wapello—President, Frank Gephard, Ottumwa; Secretary, Madison Warder, Agency.

Warren—President, H. J. Switzer, Indianola; Secretary, W. C. Hastie, Carlisle.

Washington—President, David McLaughlin, Washington; Secretary, John S. Wilson, Washington.

Wayne—President, F. H. Duncan, Allerton; Secretary, O. B. Cobb, Allerton.

Webster—President, I. B. Parks, Industry; Secretary, J. F. Monk, Ft. Dodge.

Winnebago—Presidet, Henry Thompson, Lake Mills; Secretary, L. C. Brown, Lake Mills.

Winneshiek—President, J. H. McMillan, Mable, Minn.; Secretary W. Albert Van Vleit, Prosper, Minn.

Woodbury—President, H. E. Brown, Salix; Secretary, F. C. Colby, Sargent Bluffs.

Worth—President, T. L. Bolton, Northwood; Secretary, E. J. McQuatters, Northwood.

Wright—President, F. A. Thayer, Dows, R. F. D.; Secretary, Geo. Sevick, Dows.

SHORT COURSES CONDUCTED BY AGRICULTURAL EXTENSION DEPARTMENT DURING SEASON OF 1908-09.

Black Hawk—Waterloo Short Course, Waterloo; President, R. M. Gunn; Secretary, Chas. Elliott.

Boone—Boone Short Course, Boone; Secretary, Lucy McPherson.

Buena Vista—Storm Lake Short Course, Storm Lake; President, Wm. Huxtable; Secretary, S. R. Haines.

Cerro Gordo—Mason City Short Course, Mason City; President, Dan McArthur; Secretary, C. H. Barber.

Cherokee—Cherokee Short Course, Cherokee; Secretary, Kate R. Logan.

Clay—Spencer Short Course, Spencer; President, F. M. Black; Secretary, C. E. Wells.

Crawford—Denison Short Course, Denison; Secretary, Grace E. Meyer.

Dallas—Dallas Center Short Course, Dallas Center; Secretary, Mrs. Clyde Brenton.

Decatur—Leon Short Course, Leon; Secretary, Mrs. J. W. Rowell.

Delaware—Manchester Short Course, Manchester; President, Henry Brayton; Secretary, F. D. Joseph.

Hardin—New Providence Short Course, New Providence; President, Prof. A. F. Styles; Secretary, A. F. Styles.

Henry—Mt. Pleasant Short Course, Mt. Pleasant; President, Jas. T. Gillis; Secretary, E. W. Martin.

Jasper—Newton Short Course, Newton; President, Geo. Simpson; Secretary, Ernest L. Early.

Jefferson—Fairfield Short Course, Fairfield; President, Wm. Louden; Secretary, Chas. H. Gage.

Linn—Cedar Rapids Short Course, Cedar Rapids; President, Fred McCulloch; Secretary, W. E. Holmes.

Marion—Pella Short Course, Pella; President, Prof. Jay D. Lapham; Secretary, Jay H. Lapham.

Marshall—Marshalltown Short Course, Marshalltown; President, C. E. Arney; Secretary, Merrit Green, Jr.

O'Brien—Sheldon Short Course, Sheldon; Secretary, W. P. Briggs.

Osceola—Sibley Short Course, Sibley; Secretary, Mrs. T. S. Redmond.

Page—Clarinda Short Course, Clarinda; Secretary, Jessie Field.

Pottawattamie—Avoca Short Course, Avoca; President, Wm. Thies; Secretary, Caleb Smith.

Shelby—Elkhorn Short Course, Elkhorn; President, M. C. Peterson; Secretary, M. C. Peterson.

Union—Creston Short Course, Creston; Secretary, Carry B. Williams.

Woodbury—Correctionville Short Course, Correctionville; President, A. W. Hatfield; Secretary, Fred W. Colvin.

POULTRY ASSOCIATIONS IN IOWA.

Ames Poultry Association—Ames; J. Burt, Secretary.

Anamosa Poultry Association—Anamosa; C. W. Metcalf, Secretary.

Boyer Valley Poultry Association—Dunlap; E. R. Caldwell, Secretary.

Carrol County Poultry Association—Manning; W. B. Parrott, Secretary.

Cedar County Poultry Association—Tipton; R. M. Gregg, Secretary.

Central Iowa Poultry Association—Monroe; John Q. Vandermast, Secretary.

Corydon Poultry Association—Corydon; A. T. Galloghor, Secretary.

Estherville Poultry Association—Estherville; W. W. Walker, Secretary.

Iowa State Poultry Association—Des Moines; Geo. S. Phillips, Secretary.

Lamoni Poultry Association—Lamoni; W. H. Blair, Secretary.

Lee County Poultry and Pet Stock Association—Wes Point; Albert M. King, Secretary.

LeGrand Poultry Association—LeGrand; L. C. Knudson, Secretary.

Maquoketa Poultry Fanciers' Association—Maquoketa; N. J. Rankin, Secretary.

Milton Poultry Association—Milton; F. M. Robinson, Secretary.

Montezuma Poultry Association—Montezuma; Joseph Morris, Secretary.

New Hampton Poultry Association—New Hampton; J. C. Mueller, Secretary.

New London Poultry Association—New London; G. R. Hill, Secretary.

Northern Iowa Fanciers' Association—Spencer; Geo. O. Round, Secretary.

Northwestern Poultry Fanciers' Association—Iowa Falls; H. S. Dixon, Secretary.

Northern Iowa Poultry Association—Fort Dodge; Mrs. Jas. Martinek, Secretary.

Randall and Story City Poultry Association—(Location not decided;) G. H. Amlund, Secretary.

Southwestern Poultry and Pet Stock Association—Donnellson; Edw. Miller, Secretary.

Tri-States Poultry Association—Keokuk; Chas. C. Lawson, Secretary.

The Appanoose County Poultry Association—Centerville; Lloyd B. Mishler, Secretary.

Taylor County Poultry Association—Bedford; J. W. Hopson, Secretary.

Van Buren County Poultry Association—(Location not decided;) Ed. Smith, Secretary.

Webster City Poultry Association—Webster City; H. E. Ross, Secretary.

West Liberty Poultry Breeders' Association—West Liberty; W. H. Shipman, Secretary.

Western Poultry Fanciers' Association—Cedar Rapids; S. M. Wiley, Secretary.

Winfield Poultry and Corn Association—Winfield; Russell Canby, Secretary.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE.*

College instruction in agriculture is given in the colleges and universities receiving the benefits of the acts of Congress of July 2, 1862, and August 30, 1890, which are now in operation in all the states and territories, except Alaska, Hawaii, and Porto Rico. The total number of these institutions is 65, of which 63 maintain courses of instruction in agriculture. In 21 states the agricultural colleges are departments of the state universities. In 15 states and territories separate institutions having courses in agriculture are maintatined for the colored race. All of the agricultural colleges for white persons and several of those for negroes offer four-year courses in agriculture and its related sciences leading to bachelors' degrees, and many provide for graduate study. About 59 of these institutions also provide special, short, and correspondence courses in the different branches of agriculture, including agronomy, horticulture, animal husbandry, poultry raising, cheese making, dairying, sugar making, rural engineering, farm mechanics, and other technical subjects. The officers of the agricultural colleges engage quite largely in conducting farmers' institutes and various other forms of college extension. The agricultural experiment stations with very few exceptions are departments of the agricultural colleges. The total number of persons engaged in the work of education and research in the land-grant colleges and the experiment stations in 1907 was 6,243; the number of students in these colleges, 66,193; the number of students (white) in the four-year college courses in agriculture, 3,738; in short and special courses, 5,334. There were also 1,659 students in agriculture in the separate institutions for negroes. With a few exceptions, each of these colleges offers free tuition to residents of the state in which it is located. In the excepted cases scholarships are open to promising and energetic students; and, in all, opportunities are found for some to earn part of their expenses by their own labor. The expenses are from $125 to $300 for the school year.

State or Territory	Name of Institution	Location	President
Alabama	Alabama Polytechnic Institute	Auburn	C. C. Thach
	Agricultural School of the Tuskegee Normal and Industrial Institute	Tuskegee Insti	B. T. Washington
	Agricultural and Mechanical College for Negroes	Normal	W. H. Councill
Arizona	University of Arizona	Tucson	K. C. Babcock
Arkansas	University of Arkansas	Fayetteville	J. N. Tillman
	†Branch Normal College	Pine Bluff	Isaac Fisher
California	University of California	Berkeley	B. I. Wheeler
Colorado	The State Agricultural College of Colorado	Fort Collins	B. O. Aylesworth
Connecticut	Connecticut Agricultural College	Storrs	R. W. Stimson
Delaware	Delaware College	Newark	G. A. Harter
	State College for Colored Students	Dover	W. C. Jason
Florida	University of the State of Florida	Gainesville	Andrew Sledd
	Florida State Normal and Industrial School	Tallahassee	N. B. Young

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* Including only institutions established under the land grant act of July 2, 1862.

†Does not maintain courses in agriculture.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS—CONTINUED

State or Territory	Name of Institution	Location	President
Georgia	Georgia State College of Agriculture and Mechanic Arts	Athens	A. M. Soule
	Georgia State Industrial College	Savanah	R. R. Wright
Idaho	University of Idaho	Moscow	J. A. MacLean
Illinois	University of Illinois	Urbana	E. J. James
Indiana	Purdue University	Lafayette	W. E. Stone
Iowa	Iowa State College of Agriculture and Mechanic Arts	Ames	A. B. Storms
Kansas	Kansas State Agricultural College	Manhattan	E. R. Nichols
Kentucky	State University	Lexington	J. K. Patterson
	The Kentucky Normal and Industrial Institute for Colored Persons	Frankfort	J. H. Jackson
Louisiana	Louisiana State University and Agricultural and Mechanical College	Baton Rouge	T. D. Boyd
	Southern University and Agricultural and Mechanical College	New Orleans	H. A. Hill
Maine	The University of Maine	Orone	G. E. Fellows
Maryland	Maryland Agricultural College	College Park	R. W. Silvester
	Princess Anne Academy, Eastern Branch of the Maryland Agricultural College	Princess Anne	F. Trigg
Massachusetts	Massachusetts Agricultural College	Amherst	K. L. Butterfield
	Massachusetts Institute of Technology	Boston	Henry S. Pritchett
Michigan	Michigan State Agricultural College	East Lansing	J. L. Snyder
Minnesota	The University of Minnesota	Minneapolis	C. Northrop
Mississippi	Mississippi Agricultural and Mechanical College	Agri. College	J. C. Hardy
	Alcorn Agricultural and Mechanical College	Alcorn	L. J. Rowan
Missouri	College of Agricultural and Mechanic Arts of the University of Missouri	Columbia	R. H. Jesse
	School of Mines and Metallurgy of the University of Missouri	Rolla	G. E. Ladd
	Lincoln Institute	Jefferson	B. F. Allen
Montana	Montana Agricultural College	Bozeman	Jas. M. Hamilton
Nebraska	Industrial College of the University of Nebraska	Lincoln	E. B. Andrews
Nevada	University of Nevada	Reno	J. E. Stubbs
New Hampshire	New Hampshire College of Agriculture and the Mechanic Arts	Durham	W. D. Gibbs
New Jersey	Rutgers Scientific School (The New Jersey State College for the Benefit of Agriculture and the Mechanic Arts)	New Brunswick	W. H. S. Demarest
New Mexico	New Mexico College of Agriculture and Mechanic Arts	Agri. College	Luther Foster
New York	Cornell University	Ithaca	J. G. Schurman
North Carolina	The North Carolina College of Agriculture and Mechanic Arts	West Raleigh	G. T. Winston
	The Agricultural and Mechnical College for the Colored Race	Greensboro	J. B. Dudley
North Dakota	North Dakota Agricultural College	Agri. College	J. H. Worst
Ohio	Ohio State University	Columbus	W. O. Thompson
Oklahoma	Oklahoma Agricultural and Mechanical College	Stillwater	J. H. Connell
	Agricultural and Normal University	Langston	I. E. Page

*Does not maintain courses in agriculture.
†Acting president.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS—CONTINUED

State or Territory	Name of Institution	Location	President
Oregon	Oregon State Agricultural College	Corvallis	W. J. Kerr
Pennsylvania	The Pennsylvania State College	State College	Jas. A. Beaver†
Rhode Island	Rhode Island College of Agriculture and Mechanic Arts	Kingston	Howard Edwards
South Carolina	The Clemson Agricultural College of South Carolina	Clemson College	P. H. Mell
	The Colored Normal, Industrial, Agricultural and Mechanical College of South Carolina	Orangeburg	T. E. Miller
South Dakota	South Dakota State College of Agriculture and Mechanic Arts	Brookings	Robert L. Slagle
Tennessee	University of Tennessee	Knoxville	Brown Ayres
Texas	Agricultural and Mechanical College of Texas	College Station	H. H. Harrington
	Prairie View State Normal and Industrial College	Prairie View	E. L. Blackshear
Utah	The Agricultural College of Utah	Logan	J. A. Widtsoe
Vermont	University of Vermont and State Agricultural College	Burlington	M. H. Buckham
Virginia	The Virginia Agricultural and Mechanical College and Polytechnic Institute	Blacksburg	P. B. Barringer
	The Hampton Normal and Agricultural Institute	Hampton	H. B. Frissell
Washington	State College of Washington	Pullman	E. A. Bryan
West Virginia	West Virginia University	Morgantown	D. B. Purinton
	The West Virginia Colored Institute	Institute	J. McH. Jones
Wisconsin	University of Wisconsin	Madison	Chas. R. Van Hise
Wyoming	University of Wyoming	Laramie	J. D. Towar†

NATIONAL BEE KEEPERS' ASSOCIATION.

President, Geo. Hilton, Fremont, Mich.; Secretary, W. Z. Hutchinson, Flint, Mich.; General Manager and Treasurer, N. E. France, Platteville, Wis.

NATIONAL ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

President, S. A. Forbes, Urbana, Ill.; Secretary, A. F. Burgess, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

President, Harry Snyder, St. Anthony Park, Minn.; Secretary, H. W. Wiley, Chemist, Department of Agriculture, Washington, D. C.

HORTICULTURAL AND KINDRED SOCIETIES.

Name of Organization	Secretary	Post-office
American Apple Growers' Congress	T. C. Wilson	Hannibal, Mo.
American Association of Nurserymen	Geo. C. Seager	Rochester, N. Y.
American Carnation Society	Albert M. Herr	Lancaster, Pa.
American Cranberry Growers' Association	A. J. Rider	Hammonton, N. J.
American Federation of Horticultural Societies	Chas. E. Bassett	Fennville, Mich.
American Institute, Horticultural Section	Leonard Barron	19 W. 44th St., New York, N. Y.
American Nurserymen's Protective Association	Thos. B. Meehan	Dreshertown, Pa.
American Pomological Society	John Craig	Ithaca, N. Y.
American Retail Nurserymen's Protective Association	Guy A. Bryant	Princeton, Ill.
American Rose Society	Benjamin Hammond	Fishkill on Hudson, N. Y.
Crysanthemum Society of America	David Fraser	Pittsburg, Pa.
Cider and Cider Vinegar Makers' Association of the Northwest	George Miltenberger	St. Louis, Mo.
Eastern Nurserymen's Association	Wm. Pitkin	Rochester, N. Y.
International Apple Shippers' Association	A. Warren Patch	Boston, Mass.
Mississippi Valley Apple Growers' Association	James Handly	Quincy, Ill.
Missouri Valley Horticultural Society	A. V. Wilson	Muncie, Kans.
National Association of Retail Nurserymen	F. E. Grover	Rochester, N. Y.
National Council of Horticulture	H. C. Irish	Missouri Botanical Garden, St. Louis, Mo.
National League of Commission Merchants of the United States	A. Warren Patch	Boston, Mass.
National Nut Growers' Association	J. F. Wilson	Poulan, Ga.
Northwestern Fruit Growers' Association	C. D. Huffman	La Grande, Ore.
Nurserymen's Mutual Protective Association	Geo. C. Seager	Rochester, N. Y.
Pacific Coast Association of Nurserymen	C. A. Tonneson	Tacoma, Wash.
Peninsula Horticutlural Society	Wesley Webb	Dover, Del.
Society for Horticultural Science	C. P. Close	College Park, Md.
Society of American Florists and Ornamental Horticulturists	P. J. Hauswirth	Chicago, Ill.
Southern Nurserymen's Association	A. I. Smith	Knoxville, Tenn.
Southwestern Nurserymen's Association	J. A. Taylor	Wynnewood, Okla.
Western Association of Nurserymen	E. J. Holman	Leavenworth, Kans.
Western Fruit Jobbers' Association	E. B. Branch	Omaha, Neb.

STATE HIGHWAY OFFICIALS.

State	Name and Title	Postoffice
California	N. Ellery, State engineer, department of engineering	Sacramento
Connecticut	James H. MacDonald, commissioner, State highway department	Hartford
Colorado	T. W. Jaycox, State engineer	Denver
Delaware	Francis A. Price, State highway Commissioner, Newcastle county	Dover
District of Columbia	C. B. Hunt, engineer of highways	Washington, D. C.
Idaho	James Stephenson, Jr., State engineer	Boise
Illinois	Dr. E. J. James, chairman, State highway commission	Springfield
	A. N. Johnson, highway engineer, State highway commission	Springfield
Iowa	Prof. A. Marston, dean, division of engineering	Ames
	T. H. McDonald, assistant in charge public roads, State College	Ames
Maine	Paul D. Sargent, commissioner of highways	Augusta
Maryland	Wm. Bullock Clark, State geologist	Baltimore
	Walter W. Crosby, chief engineer, highway division, geological survey	Baltimore
Massachusetts	William E. McClintock, chairman, State highway commission	Boston
	A. B. Fletcher, secretary, State highway commission	Boston
Michigan	Horatio S. Earle, commissioner, State highway department	Lansing
	Frank F. Rodgers, highway engineer	Lansing
Minnesota	Gustav Scholle, president, State highway commission	Minneapolis
	George W. Cooley, engineer, State highway commission	Minneapolis
Missouri	Curtis Hill, State highway engineer	Columbia
New Hampshire	Arthur W. Dean, State engineer, highway department	Concord
New Jersey	Frederick Gilkyson, commissioner of public roads	Trenton
	R. A. Meeker, supervisor, State commission of public roads	Trenton
New York	Frederick Skene, State engineer and surveyor	Albany
North Carolina	Samuel L. Patterson, chairman, State highway commission	Raleigh
Ohio	Sam Huston, commissioner, State highway department	Columbus
Pennsylvania	Joseph W. Hunter, State highway commissioner	Harrisburg
	R. D. Beman, assistant commissioner	Harrisburg
Rhode Island	John H. Edwards, chairman, State board of public roads	Providence
Vermont	Charles W. Gates, State highway commissioner	Montpelier
Virginia	P. St. Julien Wilson, State highway commissioner	Richmond
Washington	Joseph M. Snow, highway commissioner	Olympia
West Virginia	H. E. Williams, State highway inspector	Charleston
Wisconsin	W. O. Hotchkiss, chief highway division, State geological survey	Madison

STATE OFFICIALS IN CHARGE OF PROTECTION OF GAME.

State	Name and Title	Postoffice
Alabama	John H. Wallace, Jr., State game and fish commissioner	Montgomery
Arizona	W. L. Pinney, secretary, fish and game commission	Phoenix
California	Chas. A. Vogelsang, chief deputy, board of fish commissioners	San Francisco
Colorado	David E. Farr, State game and fish commissioner	Denver
Connecticut	E. Hart Gee, secretary, commission of fisheries and game	Hadlyme
Delaware	A. D. Poole, president, Delaware Game Protective Association	Wilmington
District of Columbia	Maj. Richard Sylvester, superintendent metropolitan police	Washington
Idaho	Wm. N. Stephens, fish and game warden	Rexburg
Illinois	Dr. John A. Wheeler, State game commissioner	Springfield
Indiana	Z. T. Sweeney, commissioner of fisheries and game	Columbus
Iowa	G. A. Lincoln, State fish and game warden	Cedar Rapids
Kansas	D. W. Travis, State fish and game warden	Pratt
Maine	L. T. Carleton, chairman, commission of inland fisheries and game	Augusta
Maryland	Horace F. Harmonson, State game warden	Berlin
Massachusetts	Dr. George W. Field, chairman, commission of fisheries and game	Boston
Michigan	Charles S. Pierce, game and fish warden	Lansing
Minnesota	Carlos Avery, executive agent, board of game and fish commisioners	St. Paul
Missouri	James C. Bassford, game and fish warden	Mexico
Montana	William F. Scott, State game and fish warden	Helena
Nebraska	George L. Carter, chief deputy, game and fish commission	Lincoln
New Hampshire	Nathaniel Wentworth, chairman, board of fish and game commissioners	Hudson
New Jersey	Benedict C. Kuser, president, board of fish and game commissioners	Trenton
New Mexico	W. E. Griffin, game and fish warden	Santa Fe
New York	James S. Whipple, forest, fish and game commissioner	Albany
North Carolina	T. Gilbert Pearson, secretary Audubon Society	Greensboro
North Dakota	W. N. Smith, game warden district No. 1	Grafton
	Olaf Bjorke, game warden district No. 2	Abercrombie
Ohio	Gen. John C. Speaks, chief warden	Columbus
Oklahoma	Eugene Watrous, State game and fish warden	Enid
Oregon	J. W. Baker, game and forestry warden	Cottage Grove
Pennsylvania	Dr. Joseph Kalbfus, secretary, board of game commissioners	Harrisburg
Rhode Island	John H. Flanagan, chairman, commission of birds	Providence
South Carolina	B. F. Taylor, president, Audubon Society	Columbia
Tennessee	Joseph H. Acklen, State warden of game, fish and forestry	Nashville
Texas	R. W. Lorance, chief deputy game, fish and oyster commissioner	Austin
Utah	H. B. Cromar, State fish and game commissioner	Salt Lake City
Vermont	Henry G. Thomas, fish and game commissioner	Stowe
Washington	R. C. Bebee, chief deputy State game warden	Bellingham
West Virginia	F. H. Merrick, chief deputy game and fish warden	Huntington
Wisconsin	J .W. Stone, State warden	Madison
Wyoming	D. C. Nowlin, State game warden	Lander

ORGANIZATIONS FOR PROTECTION OF BIRDS AND GAME.

Name of Organization	Secretary	Postoffice
American Ornithologist's Union, Committee on Protection of North American Birds	A. K. Fisher, Chairm'n	Department of Agriculture, Washington, D. D.
Bird Protective Society of America	Edward C. Pease	28 Stafford Bldg., Buffalo, N. Y.
Boone and Crockett Club	Madison Grant	11 Wall St., New York, N. Y.
Forest, Fish and Game Society of America	Wm. F. Kimber	509 5th Ave., New York City, N. Y.
League of American Sportsmen	Arthur F. Rice	949 Broadway, New York, N. Y.
Lewis and Clark Club	J. Bissell Speer	345 4th Ave., Pittsburg, Pa.
National Association of Game and Fish Wardens	Chas. A. Vogelsang	Merchants' Exchange Bldg., San Francisco, Cal.
National Association of Audubon Societies	Wm. Dutcher, Pres.	141 Broadway, New York, N. Y.
New York Zoological Society	Madison Grant	11 Wall St., New York, N. Y.
North American Fish and Game Protective Association	E. T. D. Chambers	Quebec, Canada.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES, THEIR LOCATIONS, DIRECTORS, AND PRINCIPAL LINES OF WORK.

Station, location and director	Principal lines of work.
Alabama (College), Auburn: J. F. Duggar	Field experiments; plant breeding; soil improvement; feeding experiments; entomology; diseases of plants and animals; analysis of fertilizers.
Alabama (Canebrake), Uniontown: F. D. Stevens*	Agronomy; hotriculture; floriculture; plant breeding; diseases of plants.
Alabama (Tuskegee), Tuskegee Institute: G. W. Carver	Agronomy; horticulture; diseases of plants; animal industry; poultry investigation; dairying.
Alaska, Sitka (Copper Center, Rampart, Kenai, Kadiak, and Fairbanks): C. C. Georgeson†	Agronomy; plant introduction; plant breeding; horticulture; animal husbandry; dairying; meteorology.
Arizona, Tucson: R. H. Forbes	Chemistry; botany; agronomy; horticulture; improvement of ranges; animal husbandry; plant diseases; irrigation.
Arkansas, Fayetteville: W. G. Vincenheller	Chemistry; soil physics; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology; poultry experiments; nursery inspection.
California, Berkeley: E. J. Wickson	Chemistry; soils; bacteriology; fertilizer control; agronomy; horticulture; including viticulture and zymology; botany; meteorology; entomology; animal husbandry; dairying; poultry experiments; irrigation and drainage; silviculture; reclamation of alkali lands; animal and plant pathology; nutrition investigations.
Colorado, Fort Collins: L. G. Carpenter	Chemistry; meteorology; agronomy; horticulture; forestry; plant breeding; diseases of plants; animal husbandry; veterinary investigations; entomology; irrigation.
Connecticut (State), New Haven E. H. Jenkins	Chemistry; inspection of fertilizers, foods, feeding stuffs, Babcock test apparatus and nurseries; diseases of plants; plant breeding; forestry; agronomy; entomology; investigation of vegetable proteids.
Connecticut (Storrs), Storrs: L. A. Clinton	Dairy bacteriology; agronomy; horticulture; plant breeding; poultry culture; dairying.
Delaware, Newark: Harry Hayward	Chemistry; mycology; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; entomology.
Florida, Gainesville: P. H. Rolfs	Chemistry; agronomy; horticulture; diseases of plants; feeding experiments; veterinary science; entomology.
Georgia, Experiment: M. V. Calvin	Chemistry; agronomy; bacteriology; horticulture; plant breeding; plant diseases; entomology; animal husbandry; dairying.
Hawaii, Honolulu: J. G. Smith†	Chemistry; analysis of soil and feeding stuffs; agronomy; horticulture; packing and shipping of tropical fruits; plant breeding; entomology; apiculture; sericulture; rubber investigations; rice investigations.

*Assistant director.
†Special agent in charge.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES—CONTINUED

Station, location and director	Principal lines of work
Idaho, Moscow: H. T. French	Chemistry; physics; botany; agronomy; horticulture; plant breeding; diseases of plants; entomology; animal husbandry; irrigation; dairying; dry farming; wheat investigations; fruit by-products.
Illinois, Urbana: E. Davenport	Chemistry; soil physics; bacteriology; agronomy; horticulture; forestry; plant breeding; diseases of plants and animals; animal husbandry; dairying.
Indiana, Lafayette: Arthur Goss	Chemistry; soils; agronomy; horticulture; plant breeding; feeding stuff and fertilizer control; animal husbandry; dairying; diseases of plants and animals; entomology; agriculture extension work.
Iowa, Ames: C. F. Curtiss	Chemistry; botany; agronomy; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; poultry investigations; dairying; entomology; rural engineering; good roads investigations.
Kansas, Manhattan: C. W. Burkett	Chemistry; soils; inspection of feeding stuffs and fertilizers; horticulture; plant breeding; agronomy; animal husbandry; poultry experiments; diseases of animals; dairying; entomology; extermination of prairie dogs and gophers; irrigation.
Kentucky, Lexington: M. A. Scovell	Chemistry; soils; inspection of fertilizers, foods, feeding stuffs, orchards, and nurseries; agronomy; horticulture; plant breeding; animal husbandry; dairying; diseases of plants; entomology; apiculture.
Louisiana (Sugar), New Orleans: W. R. Dodson	Chemistry; bacteriology; soils; agronomy; horticulture; sugar making; drainage; irrigation.
Louisiana (State), Baton Rouge: W. R. Dodson	Geology; botany; bacteriology; soils; inspection of fertilizers, feeding stuffs, and Paris green; agronomy; horticulture; animal husbandry; diseases of animals, entomology.
Louisiana (North), Calhoun: W. R. Dodson	Chemistry; soils; fertilizers; agronomy; horticulture; animal husbandry; stock raising; poultry experiments; dairying.
Maine, Orono: C. D. Woods	Chemistry; botany; inspection of foods, fertilizers, commercial feeding stuffs, seeds, and creamery glassware; mycology; pathology; nutrition of man and animals; poultry raising; plant breeding; entomology.
Maryland, College Park: H. J. Patterson	Chemistry; fertilizers; agronomy; horticulture; plant breeding; diseases of plants and animals; breeding of plants; animal husbandry; poultry experiments; dairying; entomology.
Massachusetts, Amherst: W. P. Brooks	Chemistry; meteorology; inspection of fertilizers, commercial feeding stuffs, creamery glassware, and nurseries; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology; effect of electricity on plant growth.
Michigan, East Lansing: R. S. Shaw	Chemistry; analysis and control of fertilizers; bacteriology; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; stable hygiene; entomology.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES—CONTINUED

Station, location and director	Principal lines of work
Minnesota, St. Anthony Park, St. Paul: E. W. Randall	Chemistry; soils; fertilizers; agronomy; horticulture; forestry; diseases of plants and animals; food and nutrition investigation; plant breeding; animal husbandry; dairying; entomology; farm management; farm statistics.
Mississippi, Agricultural College: W. L. Hutchinson	Fertilizers; agronomy; horticulture; biology; plant breeding; animal husbandry; diseases of animals; poultry culture; dairying; entomology; agricultural engineering.
Missouri (College), Columbia: H. J. Waters	Chemistry; soil survey; botany; agronomy; horticulture; diseases of plants and animals; animal husbandry; plant breeding; dairying; entomology.
Missouri (Fruit), Mountain Grove: Paul Evans	Horticulture; vegetable pathology; entomology; inspection of orchards and nurseries.
Montana, Bozeman: F. B. Linfield	Chemistry; meteorology; botany; agronomy; dry farming; horticulture; animal husbandry; poultry experiments; dairying; entomology; irrigation and drainage.
Nebraska, Lincoln: E. A. Burnett	Chemistry; botany; meteorology; soils; agronomy; horticulture; plant breeding; diseases of plants and animals; forestry; animal husbandry; dairying, entomology; irrigation.
Nevada, Reno: J. E. Stubbs	Chemistry; botany; soils; meterology; agronomy; horticulture; forestry; plant breeding; animal diseases; animal husbandry; veterinary science and bacteriology; zoology; entomology; irrigation.
New Hampshire, Durham: W. D. Gibbs	Chemistry; botany; agronomy; horticulture; plant breeding; animal husbandry; dairying; entomology.
New Jersey (State), New Brunswick: E. B. Voorhees	Chemistry; oyster culture; botany; analysis of fertilizers, foods, and commercial feeding stuffs; agronomy; horticulture; plant breeding; diseases of plants and naimals; dairy husbandry; entomology; soil chemistry and bacteriology; irrigation.
New Jersey (College), New-brunswick: E. B. Voorhees	
New Mexico, Agricultural College: Luther Foster	Chemistry; botany; soils; agronomy; dry farming; horticulture; cactus and guayule plant investigations, animal husbandry; dairying; entomology; irrigation.
New York (State), Geneva: W. H. Jordan	Chemistry; bacteriology; meteorology; fertilizers; inspection of creamery glassware, feeding stuffs, fertilizers, and Paris green; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; poultry experiments; dairying; entomology; irrigation.
New York (Cornell), Ithaca: L. H. Bailey	Chemistry; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; poultry experiments; dairying; entomology.
North Carolina, West Raleigh: C. B. Williams	Chemistry; soils; agronomy; horticulture; animal husbandry; diseases of animals and plants; poultry experiments; dairying; tests of farm machinery.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES—CONTINUED

Station, location and director	Principal lines of work
North Dakota, Agricultural College: J. H. Worst	Chemistry; soils; botany; agronomy; plant breeding; horticulture; forestry; diseases of plants and animals; animal husbandry; poultry experiments; drainage; milling and chemical tests of wheat; inspection and analysis of foods, spraying materials; paints; proprietary products, and feeding stuffs.
Ohio, Wooster: C. E. Thorne	Chemistry; soils; agronomy; botany; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; entomology.
Oklahoma, Stillwater: W. L. English	Chemistry; agronomy; horticulture; plant breeding; forestry; botany; bacteriology; diseases of plants and animals; animal husbandry; entomology.
Oregon, Corvallis: J. Withycombe	Chemistry; bacteriology; soils; fertilizers; agronomy; horticulture; plant breeding and selection; diseases of plants; animal husbandry; poultry experiments; dairying; entomology; irrigation.
Pennsylvania, State College: T. F. Hunt	Chemistry; meteorology; fertilizers; horticulture; plant diseases; agronomy; animal husbandry; dairying.
Porto Rico, Mayaguez: D. W. May*	Agronomy; plant introductions; plant breeding; horticulture; fruit handling and shipment; chemistry; entomology; plant diseases; animal husbandry; coffee investigations.
Rhode Island, Kingston: H. J. Wheeler	Chemistry; meteorology; soils; inspection of fertilizers and feeding stuffs; agronomy; horticulture; plant breeding; poultry experiments.
South Carolina, Clemson College: J. N. Harper	Chemistry; inspection of fertilizers; soils; botany; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; dairying, veterinary science; entomology.
South Dakota, Brookings: J. W. Wilson	Chemistry; botany; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; entomology; dairying.
Tennessee, Knoxville: H. A. Morgan	Chemistry; soil investigations; inspection of fertilizers; agronomy; horticulture; plant breeding; seeds; weeds; diseases of plants and animals; animal husbandry; poultry investigations; apiculture; dairying; entomology.
Texas, College Station: H. H. Harrington	Chemistry; botany and mycology; soils; agronomy; horticulture; animal husbandry; diseases of animals; entomology; irrigation; seed testing; feed inspection.
Utah, Logan: E. D. Ball	Chemistry; agronomy; horticulture; diseases of plants and animals; animal husbandry; dairying; poultry experiments; entomology; irrigation; arid farming.
Vermont, Burlington: J. L. Hills	Chemistry; botany; bacteriology; inspection of fertilizers, feeding stuffs, and creamery glassware; agronomy; horticulture; state nursery for forest-tree seedlings; diseases of plants; animal husbandry; dairying.

*Special agent in charge.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES—CONTINUED

Stations, location and director	Principal lines of work
Virginia, Blacksburg: S. W. Fletcher	Chemistry; geology; biology; agronomy; horticulture; plant breeding; bacteriology; mycology; analysis of foods and soils; inspection of orchards; animal husbandry; veterinary science; dairying; entomology; cider and vinegar making; ferments.
Washington, Pullman: R. W. Thatcher	Chemistry; botany; bacteriology; soils; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; veterinary science; dairying; entomology; irrigation; dry farming.
West Virginia, Morgantown: J. H. Stewart	Chemistry; effect of pressure in the preservation of fruits, vegetables, and milk; artificial fixation of atmospheric nitrogen; inspection of fertilizers, orchards, and nurseries; soils; agronomy; horticulture; diseases of plants and animals; animal husbandry; poultry experiments; entomology.
Wisconsin, Madison: H. L. Russell	Chemistry; bacteriology; soils; agronomy; tobacco and cranberry culture; horticulture; plant breeding; animal husbandry; dairying; irrigation, drainage, and agricultural engineering.
Wyoming, Laramie: J. B. Towar	Chemistry; mycology; botany; meteorology; soils; range improvement; fertilizers; agronomy; plant selection; food analysis; animal husbandry; wool investigations; irrigation.

ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

President, J. L. Snyder, President of Michigan State Agricultural College, East Lansing, Mich.; Secretary-Treasurer, J. L. Hills, director of Vermont Experiment Station, Burlington, Vt.

OFFICIALS IN CHARGE OF FARMERS' INSTITUTES.

Farmers' Institute Specialist, Departments of Agriculture.

JOHN HAMILTON, WASHINGTON, DISTRICT OF COLUMBIA.

STATE SUPERINTENDENTS.

State or Territory	Name of Official	Postoffice
Alabama	C. A. Cary, Alabama Polytechnic Institute	Auburn.
	G. W. Carver, Director Agricultural Experiment Station	Tuskegee Institute
Alaska	C. C. Georgeson, Agricultural Experiment Station	Sitka
Arizona	R. W. Clothier, Superintendent of Farmers' Institutes	Tucson
Arkansas	W. G. Vincenheller, Director Agricultural Experiment Station	Fayetteville
California	W. T. Clarke, Superintendent of Farmers' Institutes	Berkeley
	J. B. Neff, Conductor of Farmers' Institute in Southern California	Anaheim
Colorado	H. M. Cottrell, Director Farmers' Institutes	Fort Collins
Connecticut	James F. Brown, Secretary State Board of Agriculture	N. Stonington
	J. G. Schwink, Jr., Secretary Connecticut Dairymen's Association	Meriden
	H. C. C. Miles, Secretary Connecticut Pomological Society	Milford
Delaware	Wesley Webb, Secretary Board of Agriculture	Dover
Florida	P. H. Rolfe, Director Agricultural Experiment Station	Gainesville
Georgia	A. M. Soule, President State College of Agricultural	Athens
Hawaii	J. G. Smith, Agricultural Experiment Station	Honolulu
Idaho	H. T. French, Director Agricultural Experiment Station	Moscow
Illinois	Frank H. Hall, Superintendent Illinois Farmers' Institutes	Aurora
Indiana	W. C. Latta, Professor of Agriculture, Purdue University	Lafayette
Iowa	J. C. Simpson, Secretary State Board of Agriculture	Des Moines
Kansas	J. H. Miller, Superintendent Farmers' Institutes	Manhattan
Kentucky	M. C. Rankin, Commissioner of Agriculture	Frankfort
Louisiana	Charles Schuler, Commissioner of Agriculture	Baton Rouge
Maine	A. W. Gilman, Commissioner of Agriculture	Augusta
Maryland	W. L. Amoss, Director of Farmers' Institutes	Benson
Massachusetts	J. L. Ellsworth, Secretary State Board of Agriculture	Boston
Michigan	L. R. Taft, Superintendent of Farmers' Institutes	Agricultural College
Minnesota	A. D. Wilson, Director Farmers' Institutes	St. Anthony Park
Mississippi	E. R. Lloyd, Director of Farmers' Institutes	Agricultural College
Missouri	Geo. B. Ellis, Secretary State Board of Agriculture	Columbia
Montana	F. B. Linfield, Director Agricultural Experiment Station	Bozeman
	F. S. Cooley, Deputy Supt. of Farmers' Institutes	Bozeman
Nebraska	E. A. Burnett, Director Agricultural Experiment Station	Lincoln
	Val. Keyser, Asst. Supt. Farmers' Institutes	Lincoln

STATE SUPERINTENDENTS—CONTINUED

State or Territory	Name of official	Post-office
Nevada	J. E. Stubbs, President Nevada State University	Reno
New Hampshire	N. J. Bachelder, Secretary State Board of Agriculture	Concord
New Jersey	Franklin Dye, Secretary State Board of Agriculture	Trenton
New Mexico	J. D. Tinsley, Superintendent Farmers' Institutes	Agricultural College
New York	F. E. Dawley, Director Farmers' Institutes	Fayetteville
North Carolina	Tait Butler, State Veterinarian	Raleigh
North Dakota	T. A. Hoverstad, Superintendent of Farmers' Institutes	Fargo
Ohio	T. L. Calvert, Secretary State Board of Agriculture	Columbus
Oklahoma	B. J. Waugh, Secretary State Board of Agriculture	Guthrie
Oregon	J. Withycombe, Director Agricultural Experiment Station	Corvallis
Pennsylvania	A. L. Martin, Deputy Secretary of Agriculture	Harrisburg
Potro Rico	D. W. May, Agricultural Experiment Station	Mayaguez
Rhode Island	John J. Dunn, Secretary State Board of Agriculture	Providence
South Carolina	J. N. Harper, Director Agricultural Experiment Station	Clemson College
South Dakota	A. E. Chamberlain, Superintendent of Farmers' Institutes	Brookings
Tennessee	John Thompson, Commissioner of Agriculture	Nashville
Texas	J. W. Carson, Director Farmers' Institutes	College Station
Utah	Lewis A. Merrill, Superintendent of Farmers' Institutes	501 Security & Trust Bldg., Salt Lake City
Vermont	George Aitken, Secretary State Board of Agriculture	Woodstock
Virginia	———, Director of Institutes	Blacksburg
Washington	E. E. Elliott, Washington Agricultural College	Pullman
West Virginia	J. B. Garvin, Secretary State Board of Agriculture	Charleston
Wisconsin	G. G. McKerrow, Director Farmers' Institutes	Madison
Wyoming	J. D. Towar, Director Agricultural Experiment Station	Laramie

AMERICAN ASSOCIATION OF FARMERS' INSTITUTE WORKERS.

President, Tait Butler, State Veterinarian, Raleigh, N. C.; Secretary-Treasurer, John Hamilton, Farmers' Institute Specialist, U. S. Department of Agriculture, Washington, D. C.

FARMERS' INSTITUTES.

Farmers' institutes were held during the year ended June 30, 1907, in all of the states and territories excepting Alaska, Nevada, Porto Rico, and Texas. The following table gives a summary of the work for the year:

STATISTICS OF FARMERS' INSTITUTES FOR SEASON ENDED JUNE 30, 1907.

State or Territory	Meetings					Speakers on State force	Funds appropriated for institutes		Report of proc'dings	
	Total	One day	Two days or more	Sessions	Total attendance		Year ended June 30, 1907	Year ended June 30, 1908	Published	Copies
Alabama	24	24	------	33	2,857	12	$ 600.00	$ 600.00	No	------
Arizona	20	20	------	20	1,000	3	300.00	------	No	------
Arkansas	40	40	------	41	3,000	6	------	1,500.00	No	------
California	84	33	51	296	20,470	31	6,000.00	6,000.00	Yes	12,500
Colorado	62	44	18	171	16,960	22	5,003.19	5,000.00	No	------
Connecticut	38	37	1	74	9,522	36	2,435.57	400.00	------	------
Delaware	12	5	7	51	9,210	9	700.00	600.00	Yes	5,000
Florida	1	1	------	1	30	20	7.00	5,000.00	No	------
Georgia	------	------	------	------	------	12	2,500.00	------	Yes	3,000
Hawaii	3	1	2	6	500	5	62.05	------	Yes	1,000
Idaho	1	------	1	14	550	12	142.08	1,000.00	No	------
Illinois	111	8	103	589	333,350	107	28,978.96	18,650.00	Yes	20,000
Indiana	281	138	143	996	177,441	35	12,700.00	10,000.00	Yes	1,000
Iowa	85	------	85	340	51,000	14	7,425.00	7,425.00	No	------
Kansas	135	85	50	358	20,200	28	4,064.00	6,300.00	No	------
Kentucky	123	------	123	335	26,836	22	13,000.00	13,000.00	Yes	25,000
Louisiana	10	10	------	10	------	21	2,000.00	2,000.00	------	------
Maine	33	33	------	65	4,771	27	5,000.00	3,000.00	Yes	6,000
Maryland	23	6	17	121	9,833	8	6,000.00	6,000.00	No	------
Massachusetts	126	126	------	155	19,692	66	2,750.00	4,000.00	No	------
Michigan	329	262	67	965	115,136	48	15,500.00	------	Yes	10,000
Minnesota	139	138	1	282	67,063	12	20,665.00	18,000.00	Yes	35,000
Mississippi	148	146	2	296	17,945	19	3,000.00	3,000.00	Yes	10,000
Missouri	212	178	34	372	46,511	26	5,000.00	5,000.00	Yes	10,000
Montana	70	65	5	78	7,541	21	5,000.00	7,500.00	Yes	5,000
Nebraska	136	50	86	442	65,419	33	8,684.04	10,000.00	No	------
New Hampshire	15	14	1	34	3,500	14	1,600.00	2,000.00	Yes	2,000
New Jersey	44	36	8	132	10,399	9	3,060.98	2,500.00	No	------
New Mexico	24	24	------	29	970	11	1,900.00	800.00	No	------
New York	211	80	131	834	105,196	61	20,000.00	25,000.00	Yes	15,000
North Carolina	124	124	------	246	31,980	26	6,500.00	3,750.00	Yes	30,000
North Dakota	25	5	20	99	9,709	8	6,000.00	6,000.00	Yes	10,000
Ohio	299	------	299	1,495	92,303	41	22,000.00	22,000.00	Yes	15,000
Oklahoma	40	18	22	99	6,715	7	550.00	------	No	------
Oregon	58	51	7	148	22,200	14	3,000.00	2,500.00	No	------
Pennsylvania	394	48	346	981	147,895	56	20,500.00	23,000.00	Yes	10,000
Porto Rico*	------	------	------	------	------	5	------	------	------	------
Rhode Island	7	7	------	9	600	17	75.00	------	No	------
South Carolina	73	73	------	93	13,219	14	3,000.00	3,000.00	No	------
South Dakota	71	18	53	280	26,000	13	5,000.00	7,000.00	No	------
Tennessee	48	45	3	51	10,400	9	5,000.00	5,000.00	Yes	3,000
Utah*	------	------	------	------	------	16	------	------	------	------
Vermont	34	34	------	68	7,288	19	5,000.00	5,000.00	Yes	2,000
Virginia	7	6	1	16	310	11	2,500.00	5,000.00	------	------
Washington	24	20	4	70	5,250	14	------	5,000.00	No	------
West Virginia	110	4	106	373	24,825	31	7,476.71	12,500.00	No	------
Wisconsin	61	------	61	311	49,989	23	12,771.09	20,000.00	Yes	60,000
Wyoming	12	6	6	35	1,292	10	1,000.00	1,051.89	No	------
Total	3,927	2,063	1,864	11,514	1,596,877	1,084	$284,450.67	$285,076.89	------	290,500

*No report received.

STATE OFFICIALS IN CHARGE OF AGRICULTURE.*

COMMISSIONERS OF AGRICULTURE.

State or Territory	Name of official	Postoffice
Alabama	J. A. Wilkinson	Montgomery
Arkansas	Guy B. Tucker	Little Rock
Florida	B. E. McLin	Tallahassee
Georgia	T. G. Hudson	Atlanta
Idaho	Allen Miller, Com'r of Immigration, etc.	Boise
Kentucky	M. C. Rankin	Frankfort
Louisiana	Charles Schuler	Baton Rouge
Maine	A. W. Gilman	Augusta
Montana	J. A. Ferguson	Helena
New Mexico	Nathan Jaffa, Secretary of State	Santa Fe
New York	Chas. A. Wieting	Albany
North Carolina	S. L. Patterson	Raleigh
North Dakota	W. C. Gilbreath	Bismarck
Pennsylvania	N. B. Critchfield, Secretary of Agriculture	Harrisburg
Philippine Islands	G. E. Neson, Director of Agriculture	Manila
Porto Rico	Laurance H. Grahame, Commissioner of the Interior	San Juan
South Carolina	E. J. Watson	Columbia
Tennessee	John Thompson	Nashville
Texas	R. T. Milner	Austin
Virginia	Geo. W. Koiner	Richmond
Washington	Sam H. Nichols, Secretary of State	Olympia

SECRETARIES OF STATE BOARDS OF AGRICULTURE.

State or Territory	Name of official	Postoffice
California	J. A. Filcher	Sacramento
Colorado	A. M. Hawley	Fort Collins
Connecticut	J. F. Brown	North Stonington
Delaware	Wesley Webb	Dover
Hawaii	C. S. Holloway	Honolulu
Illinois	J. K. Dickirson	Springfield
Indiana	Chas. Downing	Indianapolis
Iowa	J. C. Simpson	Des Moines
Kansas	F. D. Coburn	Topeka
Kentucky	Perry M. Shy	Frankfort
Maryland	Wm. T. P. Turpin, Supt. of Immigration	Centerville
Massachusetts	J. L. Ellsworth	Boston
Michigan	Addison M. Brown	Agricultural College
Minnesota	C. N. Cosgrove, Sec. State Ag'l Society	St. Paul
Missouri	George B. Ellis	Columbia
Nebraska	W. R. Mellor	Lincoln
Nevada	Louis Bevier	Carson City
New Hampshire	N. J. Bachelder	Concord
New Jersey	Franklin Dye	Trenton
North Carolina	Elias Carr, Acting Secretary	Raleigh
Ohio	T. L. Calvert	Columbus
Oklahoma	Chas. F. Barrett	Guthrie
Oregon	F. A. Welch	Salem
Rhode Island	John J. Dunn	Providence
South Dakota	C. N. McIlvaine	Huron
Vermont	F. L. Davis	North Pomfret
West Virginia	J. B. Garvin	Charleston
Wisconsin	John M. True	Madison
Wyoming	C. T. Johnston, State Engineer	Cheyenne

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*Officials of Territories and island dependencies are included. So far as learned, Arizona, Mississippi and Utah have no State official charged with agricultural interests, but letters addressed to the Secretary of State would probably receive attention.

NATIONAL DAIRY ASSOCIATIONS.

Name of organization	Secretary	Post-office
International Federation of Dairying	L. Gedoelst	31 rue Jordan, Brussels, Belgium
	Ed. H. Webster, chairman American committee	U. S. Department of Agriculture, Washington, D. C.
International Association of Milk Dealers	B. D. White	U. S. Department of Agriculture, Washington, D. C.
Association of State and National Food and Dairy Departments	R. M. Allen	Lexington, Ky.
Association of Inspectors and instructors of the National and State Dairy and Food Departments	B. D. White	U. S. Department of Agriculture, Washington, D. C.
National Association of Dairy Instructors and Investigators	C. B. Lane	U. S. Department of Agriculture, Washington, D. C.
National Dairy Union	Chas. Y. Knight	154 Lake St., Chicago, Ill.
National Dairy Show Association	E. Sudendorf	154 Washington St., Chicago, Ill.
National Ceramery Buttermaker's Association	S. B. Shilling	154 Lake St., Chicago, Ill.

AMERICAN NATIONAL LIVE STOCK ASSOCIATION.

President, H. A. Jastro. Bakersfield, Cal.; Secretary, W. M. Tomlinson, Denver, Colo.

AMERICAN ASSOCIATION OF LIVE STOCK HERD BOOK SECRETARIES.

President, C. R. Thomas, Kansas City, Mo.; Secretary, Charles F. Mills, Springfield, Ill.

NATIONAL WOOL GROWERS' ASSOCIATION.

President, F. R. Gooding, Boise. Idaho; Secretary, George S. Walker, Cheyenne, Wyo.

THE CORN BELT MEAT PRODUCERS' ASSOCIATION.

President. A. L. Ames, Buckingham, Iowa; Secretary, H. C. Wallace, Des Moines, Iowa.

PROTECTION AGAINST CONTAGION FROM FOREIGN CATTLE.

An act of Congress of August 28, 1894, prohibits the importation of cattle and cattle hides, but by the act of March 2, 1895, making appropriations for the Department of Agriculture, it is provided that the prohibition may be suspended by the President whenever the Secretary of Agriculture shall certify to the President what countries or parts of countries are free from contagious or infectious diseases of domestic animals. The President, by proclamation of November 8, 1895, lifted the embargo with reference to Norway, Sweden, Holland, Great Britain, Ireland, the Channel Islands, and the countries of North, Central, and South America, so as to admit cattle under sanitary regulations prescribed by the Secretary of Agriculture; also from all countries so as to admit hides under regulations prescribed by the Secretary of the Treasury.

STOCK BREEDERS' ASSOCIATIONS.*

NAMES AND ADDRESSES OF STOCK BREEDERS' ASSOCIATION SECRETARIES, WITH BREEDS AND NUMBERS OF REGISTERED LIVE STOCK IN UNITED STATES, JUNE, 30, 1907.

CATTLE.

Breed	Secretary	Post-office	Number registered		Number living	
			Males	Females	Males	Females
Aberdeen Angus	Chas. Gray	Union Stock Yards, Chicago, Ill	36,372	59,020	31,757	40,419
Ayshire	C. M. Winslow	Brandon, Vt	10,310	22,005	1,286	7,020
Devon	L. P. Sisson	Newark, Ohio	8,381	14,094	4,000	10,000
Dutch Belted	H. P. Richards	Easton, Pa	649	1,385	175	500
Galloway	R. W. Brown	Union Stock Yards, Chicago, Ill	17,946	12,754	7,000	10,100
Guernsey	Wm. H. Caldwell	Peterboro, N. H	12,174	22,678	8,000	14,000
Hereford	C. R. Thomas	225 W. 12th St., Kansas City, Mo	133,021	135,862	†115	,000
Holstein Friesian	F. L. Houghton	Brattleboro, Vt	50,871	104,846	(‡)	(‡)
Jersey	J. J. Hemingway	8 W. 17th St., New York City	76,817	207,453	(‡)	(‡)
Polled Durham	J. H. Martz	Greenville, Ohio	6,615	7,957	4,505	5,631
Red Polled	H. A. Martin	Gotham, Wis	16,366	27,148	6,500	13,500
Shorthorn	John W. Groves	Union Stock Yards Chicago, Ill	282,000	432,903	93,000	186,000
Sussex	Overton Lea	Nashville, Tenn	85	188	68	108
Swiss, Brown	C. D. Nixon	Owego, N. Y	2,424	3,572	(‡)	(‡)
HORSES.						
Cleveland Bay	R. P. Stericker	80 Chestnut Ave., West Orange, N.J	1,262	520	1,200	450
Clydesdale	R. B. Ogilvie	Union Stock Yards, Chicago, Ill	†13,236	-------	(‡)	(‡)
Coach, French	Chas. C. Glenn	Columbus, Ohio	276	6	268	6
Coach, French	Duncan E. Willet	Maple Ave. and Harrison St., Oak Park, Ill	-------	-------	1,500	500
Coach, German	J. Crouch	Lafayette, Ind	2,149	290	1,900	250
Coach, German (Oldenburg)	C. E. Stubbs	Fairfield, Iowa	275	23	240	25
Draft, Belgian	J. D. Connor, Jr.	Wabash, Ind	2,740	395	2,800	425
Draft, French	C. E. Stubbs	Fairfield, Iowa	10.071	5,942	6,000	5,500
Hackney	Gurney C. Gue	Tichenor Grand Bldg., 61st St., & Broadway, New York City	-------	-------	622	1,176
Morgan	T. E. Boyce	Middlebury, Vt	-------	-------	2,000	2,000
Percheron	G. W. Stubblefield	Union Stock Yards, Chicago, Ill	5,022	4,614	21,500	14,000
Percheron	Chas. C. Glenn	Columbus, Ohio	1,787	413	1,762	393
Percheron	John A. Forney	Plainfield, Ohio	-------	-------	21,000	13,000
Saddle Horse	I. B. Nall	Louisville, Ky	2,890	4,126	2,166	3,096
Shetland Pony	Mortimer Levering	Lafayette, Ind	2,500	3,800	3,000	3,500
Shire	Chas. Burgess	Wenona, Ill	6,652	2,482	2,375	625
Suffolk	Alex. Galbraith	Janesville, Wis	194	128	120	100
Thoroughbred	W. H. Rowe	571 5th Ave., New York City	†49,706	-------	(‡)	(‡)
Trotter, American	W. H. Knight	355 Dearborn St., Chicago, Ill	46,170	159,845	25,000	50,000
Jacks and Jennets	J. W. Jones	Columbia, Tenn	1,436	900	(‡)	(‡)

*Under he provisions of paragraph 473 of the act of July 24, 1897, amended March 3, 1903, any animal imported specially for breeding purposes shall be admitted free provided that no such animal shall be admitted free unless pure bred, of a recognized breed, and duly registered in the book of record established for that breed. The Secretary of the Treasury, upon the advice of the Secretary of Agriculture, issued, July 11, 1906, regulations for the importation of animals under this law, and designated the recognized breeds and the books of record established for these breeds.

NAME AND ADDRESS OF STOCK BREEDERS—CONTINUED

SHEEP

Breed	Secretary	Post-office	Number registered		Number living	
			Males	Females	Males	Females
Cheviot	F. E. Dawley	Fayetteville, N. Y.	*11,410	-------	625	3,150
Cotswold	F. W. Harding	Waukesha, Wis.	*43,790	-------	*16,000	-------
Dorset Horn	J. E. Wing	Mechanicsburg, O.	1,815	4,711	1,200	3,000
Hampshire Down	Comfort A. Tyler	Nottawa, Mich.	6,540	14,694	2,500	8,000
Leicester	A. J. Temple	Cameron, Ill.	4,068	6,344	3,417	5,328
Lincoln	Bert Smith	Charlotte, Mich.	6,660	9,550	4,800	6,800
Merino (Delaine)	Beulah M. McDowell	Canton, Ohio	*10,494	-------	*8,000	-------
Merino (Delaine)	J. B. Johnson	248 W. Pike St., Cannonsburg, Pa.	6,973	11,893	500	2,000
Merino (French)	Dwight Lincoln	Milford Center, Ohio	*41,975	-------	15,000	25,000
Merino (German)	E. N. Ball	Ann Arbor, Mich.	197	256	158	194
Merino (Spanish)	E. N. Ball	Ann Arbor, Mich.	12,575	37,775	1,000	5,000
Merino (Spanish)	J. H. Earll	Skaneateles, N. Y.	7,960	11,957	90	630
Merino (Spanish)	Wesley Bishop	R. F. D. No. 1, Delaware, Ohio	17,496	34,715	3,200	7,986
Merino (Spanish)	J. P. Ray	R.F.D.No. 3, East Bloomfield, N. Y.	1,275	1,500	60	240
Merino (Spanish)	C. A. Chapman	Middlebury, Vt.	*218	,265	(†)	(†)
Oxford Down	W. A. Shafor	Hamilton, Ohio	*38,353	-------	(†)	(†)
Shropshire	Mortimer Levering	Lafayette, Ind.	112,000	154,000	50,000	90,000
Southdown	Frank S. Springer	Springfield, Ill.	*21,742	-------	*10,000	-------
Suffolk	Geo. W. Franklin	Des Moines, Iowa	* 1,143	-------	300	330

HOGS.

Berkshire	Frank S. Springer	Springfield, Ill.	*102	,040	*50,000	-------
Cheshire	Ed. S. Hill	Freeville, N. Y.	1,291	2,728	300	1,000
Chester (Ohio Improved)	J. C. Hiles	Cleveland, Ohio	*18,203	-------	7,500	22,500
Duroc Jersey	T. B. Pearson	Thorntown, Ind.	10,183	23,530	9,000	18,430
Duroc Jersey	H. C. Sheldon	Peoria, Ill.	32,010	77,500	25,000	75,000
Hampshire (Thin Rind)	E. C. Stone	Armstrong, Ill.	645	1,783	440	1,690
Poland China	W. M. McFadden	Union Stock Yards, Chicago, Ill.	63,269	156,955	40,000	16,000
Poland China	A. M. Brown	Drawer 16, Winchester, Ind.	35,000	78,000	35,000	65,000
Poland China	G. F. Woodworth	Maryville, M--o	45,675	110,060	3,000	12,000
Poland China	H. P. Wilson	Gadsden, Tenn.	897	1,316	400	700
Tamworth	E. N. Ball	Ann Arbor, Mich.	* 3,150	-------	500	2,500
Yorkshire	Harry G. Krum	White Bear Lake, Minn.	* 6,500	-------	1,200	3,000

†Total of males and females.
‡No data.

SANITARY OFFICERS IN CHARGE OF LIVE STOCK INTERESTS.

State or Territory	Name and postoffice	Official position
Alabama	C. A. Cary, Auburn	State veterinarian
Arizona	J. D. Carter, Prescott	Secretary live-stock sanitary commission
	J. C. Norton, Phoenix	Veterinarian
Arkansas	R. R. Dinwiddie, Fayetteville	State veterinarian
California	Charles Keane, Sacramento	State veterinarian
Colorado	L. B. Sylvester, Denver	President State board of stock inspection commissioners
	Charles G. Lamb, Denver	State veterinary surgeon
Connecticut	Herman O. Averhill, Hartford	Commissioner for domestic animals
Delaware	Alex. Lowber, Wilmington	Secretary State board of health
	H. P. Eves, Newark	Instructor in veterinary science, Delaware College
Florida	Thos. J. Mahaffy, Jacksonville	Veterinarian State board of health
Georgia	Thos. G. Hudson, Atlanta	Commissioner of agriculture
Hawaii	V. A. Norgaard, Honolulu	Territorial veterinarian
Idaho	Geo. E. Noble, Boise	State veterinarian
Illinois	H. E. Wadsworth, Springfield	Secretary board of livestock commissioners
	J. M. Wright, 1827 Wabash Ave. Chicago	State veterinarian
Indiana	A. W. Bitting, Lafayette	State veterinarian
Iowa	Paul O. Koto, Des Moines	State veterinary surgeon
Kansas	F. S. Schoenleber, Manhattan	Veterinarian, experiment station
	John D. Baker, Peabody	Live stock sanitary commissioner
Kentucky	F. T. Eisenman, Louisville	State veterinarian
Louisiana	W. H. Dalrymple, Baton Rouge	Veterinarian, State experiment station
Maine	F. O. Beal, Bangor	Board of cattle commissioners
	I. M. Deering, Saco	
	F. S. Adams, Bowdoinham	
Maryland	G. Allen Jarman, Chestertown	Chief veterinary inspector
	Wade H. D. Warfield, Baltimore	Secretary live-stock sanitary board
Massachusetts	Austin Peters, State House, Boston	Chief of cattle bureau, State board of agriculture
Michigan	W. M. Morris, Cass City	State veterinarian
	H. H. Hinds, Stanton	President State live-stock sanitary commission
	Comfort A. Tyler, Nottawa	Secretary State live-stock sanitary commission
Minnesota	M. H. Whitcombe, S. Paul	Secretary State live-stock sanitary board
	C. E. Cotton, Minneapolis	Veterinarian live-stock sanitary board
	H. M. Bracken, St. Paul	Secretary State board of health
Mississippi	J. C. Robert, Agricultural College	Professor of veterinary science
Missouri	D. F. Luckey, Columbia	State veterinarian
	Geo. B. Ellis, Columbia	Secretary State board of agriculture
Montana	M. E. Knowles, Helena	State veterinarian
	W. G. Preuitt, Helena	Secretary live-stock commission
Nebraska	Chas. A. McKimm, Lincoln	State veterinarian
Nevada	I. W. O'Rourke, Reno	State veterinarian
New Hampshire	N. J. Bachelder, Concord	Secretary board of cattle commissioners
New Jersey	E. B. Voorhees, New Brunswick	President State board of agriculture
	Franklin Dye, Trenton	Secretary commission on tuberculosis in animals
New Mexico	W. C. Barnes, Las Vegas	Secretary cattle sanitary board
	Harry F. Lee, Albuquerque	Secretary sheep sanitary board

SANITARY OFFICERS IN CHARGE OF LIVE STOCK INTERESTS—CONTINUED

State or Territory	Name and post-office	Official position
New York	Harry D. Gill, 154 East 57th St., New York City	State veterinarian for eastern district of New York
	C. A. Wieting, Cobleskill	Commissioner department of agriculture
	W. H. Kelly, Albany	Chief veterinarian
North Carolina	Tait Butler, Raleigh	State veterinarian
	S. L. Patterson, Raleigh	Commissioner of agriculture
North Dakota	W. F. Crewe, Devils Lake	State veterinarian
Ohio	Paul Fischer, Columbus	State veterinaran
	T. L. Calvert, Columbus	Secretary State live-stock commission
Oklahoma	C. J. Davis, Guthrie	State veterinarian
	Thomas Morris, Guthrie	Secretary live-stock sanitary commission
Oregon	C. J. Korinek, Salem	State veterinarian
	W. H. Lytle, Pendleton	Sheep inspector
Pennsylvania	Leonard Pearson, Logan Hall, University of Pennsylvania, Philadelphia	State veterinarian
Porto Rico	Thos. A. Allen, San Juan	Veterinary inspector, health office
Rhode Island	John S. Pollard, Providence	Veterinarian State board of agriculture
	John J. Dunn, Providence	Secretary State board of agriculture
South Carolina	M. Ray Powers, Clemson College	State veterinarian
South Dakota	Thos. H. Hicks, Milbank	State veterinarian
Tennessee	W. H. Dunn, Gallatin	State livestock commissioner
	John Thompson, Nashville	Commissioner of agriculture
Utah	T. B. Beatty, Salt Lake City	Secretary State board of health
	John Austin, Heber City	President State board of sheep commissioners
Texas	J. H. Wilson, Quanah	Secretary livestock sanitary commission
	W. G. Langley, 231 Main St., Dallas	State veterinarian
Vermont	H. S. Wilson, Arlington	Cattle commissioner
Virginia	J. G. Ferneyhough, Blacksburg	State veterinarian
Washington	S. B. Nelson, Pullman	State veterinarian
West Virginia	J. B. Garvin, Charleston	Secretary board of agriculture
Wisconsin	John M. True, Madison	Secretary State sanitary board
	H. L. Russell, College of Agriculture, Madison	Director State Experiment Station
Wyoming	Wm. F. Pflaeging, Cheyenne	State veterinarian
	Geo. S. Walker, Cheyenne	Secretary State board sheep commisisoners

FORESTRY ASSOCIATIONS.

American Forestry Association—President, Hon. James Wilson, Secretary of Agriculture; Secretary, Thomas E. Will, Washington, D. C.; Treasurer, Otto Luebkert, Washington, D. C.

International Society of Arboriculture—President, Gen. William J. Palmer, Colorado Springs, Colo., Vice-President, Henry John Elwes, F. R. S. Colesborne, Cheltenham, England; Secretary, J. P. Brown, Connersville, Ind.

Society of American Foresters—President, Gifford Pinchot, Washington, D. C.; Secretary, W. F. Sherfesee, Washington, D. C.

STATE ORGANIZATIONS.

Name of organization	Secretary	Address
Appalachian Mountain Club	R. B. Lawrence	Tremont Bldg., Boston
Arizona Salt River Valley Water Users' Association	C. A. Van der Veer	Phoenix, Ariz.
California:		
Water and Forest Association	T. C. Friedlander	45 Mills Bldg., San Francisco
Forestry Educational Association	E. C. Damon	San Diego
Sierra Club	William E. Colby	San Francisco
Forest and Water Society of Southern California	Wm. H. Knight	Los Angeles
Pacific Coast Forest, Fish and Game Association	Wm. Greer Harrison	San Francisco
Cincinnati Forest and Improvement Association	Adolph Leue	127 W. Twelfth St.
Colorado Forestry Association	W. G. M. Stone, pres	Denver
Connecticut Foresty Association	Miss Mary Winslow	Weatogue
Georgia Forestry Association	Alfred Akerman	Athens
Iowa Park and Forestry Association	Wesley Greene	Des Moines
Maine Forestry Association	E. E. Ring	Augusta
Massachusetts Forestry Association	Edwin A. Start	4 Joy St., Boston
Michigan Forestry Association	J. Fred Baker	East Lansing
Minnesota State Forest Association	E. G. Cheyney	St. Anthony Park
Nebraska Park and Forestry Association	L. B. Craig	York
New England Forest, Fish and Game Association	Walter L. Hill	Pierce Bldg., Boston
New Hampshire Society for the Protection of New Hampshire Forests	Allen Hollis	Concord
New York:		
State Fish, Game and Forest League	John D. Whish	Capitol, Albany
Forestry, Water Storage and Manufacturing Association of the State of New York	John C. Durgin	1 Broadway, N. York
Association for the Protection of the Adirondacks	E. H. Hall	Tribune Bldg., New York
Northern New York Forestry Association	O. B. Tappan, director	Potsdam
American Forest Preservation Society	George Milroy Bailey	Corfu, N. Y.
North Dakota State Sylvaton Society	Miss Ella J. Mitchell	Penn, N. Dak.
Ohio State Forestry Society	C. W. Waid	Wooster
Oregon Forestry Association	A. D. Monteith	Portland
Pennsylvania Forestry Association	F. L. Bitler	1012 Walnut St., Philadelphia, Pa.
Pennsylvania Franklin Forestry Society	W. G. Bowers	Chambersburg.
Vermont Forestry Association	Ernest Hitchkock	Pittsford.
Washington Forestry Association	Edmund S. Meany	Seattle.
West Virginia Forestry Association	A. W. Nolan	Morgantown

SCHOOLS OF FORESTRY.

POST-GRADUATE SCHOOLS.

Yale University, Forest School, New Haven, Conn.—A two years' post-graduate course, leading to the degree of Master of Forestry. Under the direction of the officers of the Yale Forest School, a two months' summer course, July and August, is conducted at Milford, Pike County, Pa. Prof. Henry S. Graves, Director.

University of Michigan, Forest School (part of the general Department of Literature, Science, and the Arts), Ann Arbor, Mich.—A two years' post graduate course, leading to the degree of Master of Science in Forestry. A six weeks' summer course, in July and August, is conducted on the state reserve at Roscommon. Prof. Filibert Roth, Professor of Forestry.

Harvard University, Forest School, Cambridge, Mass.—A two years' graduate course, in connection with the Graduate School of Applied Science. Prof. R. T. Fisher, in charge of curriculum.

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